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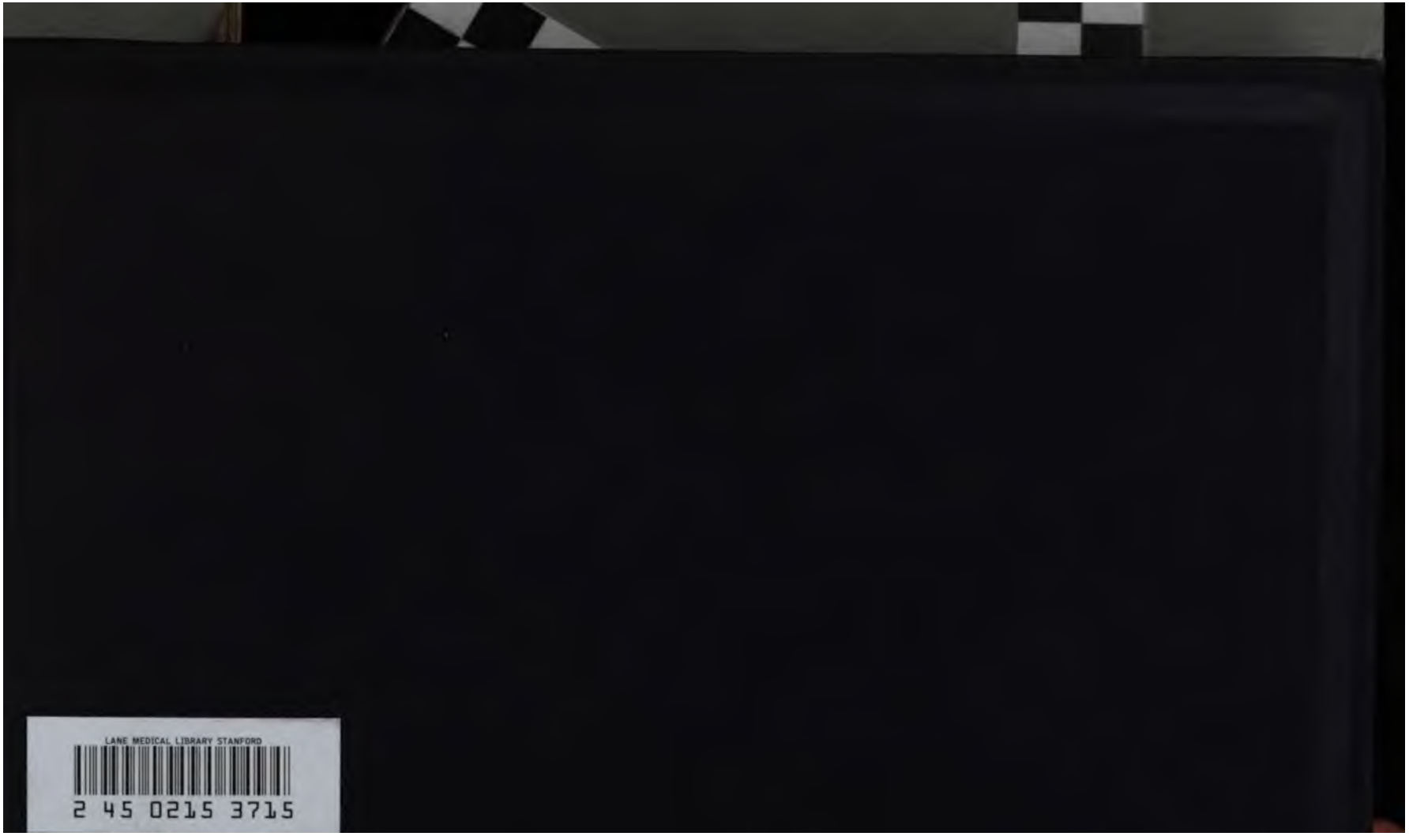
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ELEVENTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

NEW YORK.

TRANSMITTED TO THE LEGISLATURE FEBRUARY 20, 1891.

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WATER SUPPLIES.

28779

REPORT

ON

Sources of Pollution to the Water Supply of Amsterdam.

CHARLES C. BROWN, C. E.

UNION COLLEGE,
SCHENECTADY, N. Y., *October* 10, 1889.

LEWIS BALCH, M. D., *Secretary State Board of Health:*

SIR.—I have the following report to make upon the sources of pollution of the water supply of the city of Amsterdam:

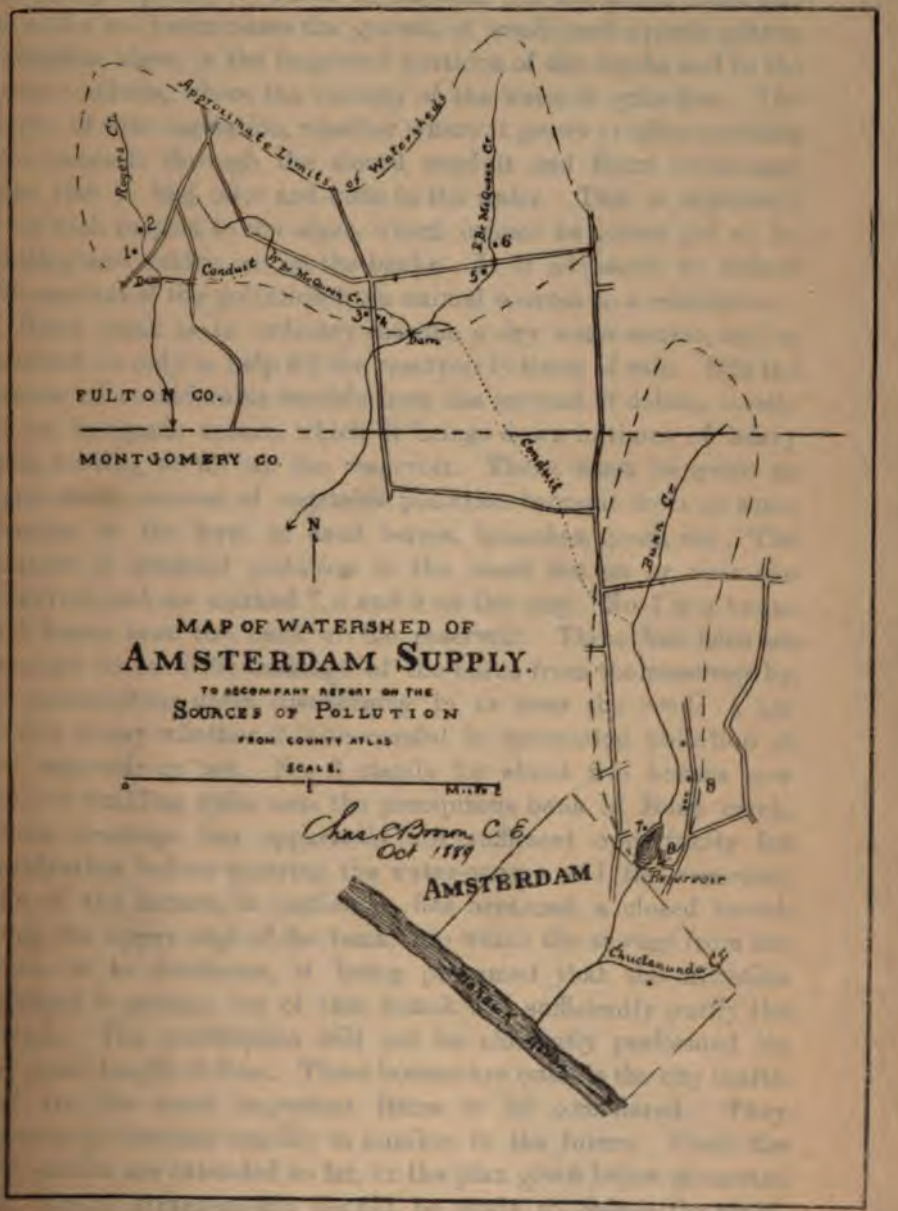
The city water supply is gathered from portions of the water-sheds of four brooks — first, Rogers creek; second, west branch of McQueen creek; third, east branch of McQueen creek, and, fourth, Bunn creek. The territory drained by these creeks is in general quite thinly settled. It is stated that the population is less at this time than formerly, as the soil is very light, and has been worked out, artificial fertilizers not having been used, and that former inhabitants have therefore moved away. This is true of all parts of the water-shed except that in and adjacent to the city, where the evidences of present and of probable future growth are plain.

The water-shed of Rogers creek, above the water-works dam, has an area of 2.375 square miles. On this territory I found but two sources of probable pollution. They are numbered 1 and 2 on the accompanying map. No. 1 is a house about 100 feet from the creek, with barns on the opposite side of the house from the creek. The only thing complained of here was the use of a small field, through which the creek runs, as a pig-yard. Its use for this purpose has been discontinued, and should remain so. No. 2 is a house about 100 feet from the brook, with one large barn, perhaps 150 feet away, with drainage from barn and manure piles towards the creek, and barnyard extending to it, in which a num-

ber of cattle run. Two smaller barn buildings are quite close to the stream. Probably some drainage, polluted by animal excrement, reaches the stream, especially in times of heavy rain. An open conduit takes the water from the dam on Rogers creek and carries it about 1,000 feet to the road east, where it discharges into a closed conduit (as indicated by a dotted line on the map), in which it runs about 1,500 feet to the west branch of McQueen creek.

The only sources of pollution observed on this west branch were those marked 3 and 4 on the map. No. 3 is a house, three barns and a privy, from fifty to 150 feet from the creek. The drainage from the barns is quite direct down a steep bank into the creek, but is probably small in amount. No. 4 is a house and privy, sixty or eighty feet from the creek, and four barn buildings, fifty to eighty feet from the creek, with a well-used barnyard extending down to the water. The slope of the banks is quite steep, and the buildings are on the upper edge or on the slopes, so that, including the barnyard, considerable polluted drainage must reach the stream. The creek has been cleaned and deepened from a point near No. 4 to the junction with the east branch, and thence up this branch for some distance, reversing the current. A dam confines the water to this deepened conduit, which is extended in an open artificial channel about 800 feet, the water being carried in a closed conduit from this point to Bunn creek, as indicated by the long dotted line marked "conduit" on the map.

The observed sources of pollution to the east branch of McQueen creek are marked 5 and 6 on the map. No. 5 is a house perhaps 120 feet from the water, with a collection of six or eight barns and outbuildings, part of these, as well as the barnyard, being quite close to the bank of the stream. It is evident that quite a large amount of pollution from animal excrement enters the stream on these premises. No. 6 is a cider mill. Quite a large amount of old pomace was seen, deposited in a heap on the bank of the stream, to be washed into it with every rain. I understand that but little effort has been made to have this refuse disposed of in other ways so as to prevent its being a source of pollution. The extent of the water-sheds of the McQueen creeks is 2.893 square miles; of Rogers and McQueen creeks together, forming the present reliable supply for the city, 5.268 square miles. The constant supply is estimated at 1,300,000 gallons a day.


Approximate Limits of Watershed
Rogers Cr.
Conduit
W. Br. McQuade Cr.
E. Br. McQuade Cr.
Dam
FULTON CO.
MONTGOMERY CO.
N
Conduit
Burns Cr.
MAP OF WATERSHED OF
AMSTERDAM SUPPLY.
TO ACCOMPANY REPORT ON THE
SOURCES OF POLLUTION
FROM COUNTY ATLAS
SCALE.
Chas. C. Brown, C. E.
Oct 1889
AMSTERDAM
Reservoir
Chuctanunda Cr.
Mohawk River

AMSTERDAM

The above described polluting matter is obnoxious in itself, though comparatively small in amount, but has a bad effect also in so far as it stimulates the growth of weeds and aquatic plants, including algae, in the improved portions of the creeks and in the open conduits, where the velocity of the water is quite low. The decay of this vegetation, whether where it grows or after reaching the reservoir through the closed conduit and Bunn creek, may give rise to bad odor and taste in the water. This is especially true with respect to the algae, which cannot be gotten rid of by cutting and raking out on the banks. It is advisable to reduce the amount of the pollution from animal sources to a minimum.

Bunn creek is in ordinary seasons a dry water-course, and is counted on only to help fill the reservoir in times of rain. It is the source of considerable trouble from the amount of debris, mostly of an inorganic nature, which it brings down in times of heavy rain, tending to fill up the reservoir. There must be quite an appreciable amount of vegetable pollution brought down at some seasons, in the form of dead leaves, branches, grass, etc. The sources of artificial pollution to the creek are on or near the reservoir, and are marked 7, 8 and 9 on the map. No. 7 is a house and barns near the bank of the reservoir. There has been an attempt to turn the drainage of the barns from the reservoir by an intercepting drain discharging in or near the road. I am unable to say whether it is successful in preventing pollution of the reservoir or not. No. 8 stands for about five houses now built or building quite near the precipitous bank of Bunn creek, whose drainage has apparently not sufficient opportunity for purification before entering the water-course and the reservoir. One of the houses, in particular, has arranged a closed trench along the upper edge of the bank, into which the sewage from the house is to discharge, it being presumed that the filtration obtained in getting out of this trench will sufficiently purify the sewage. The purification will not be efficiently performed for any great length of time. These houses are outside the city limits, and are the most important items to be considered. They promise to increase rapidly in number in the future. Until the city sewers are extended so far, or the plan given below is carried out, careful arrangements should be made to reduce the possibility of pollution from these houses to a minimum. No. 9 stands for four or five houses on or quite near the top of the steep bank

above the reservoir. These houses are within the city limits (which have been extended to include the reservoir), and have had attention from the city health board, water-tight cess-pools being required. Rules for the remainder of the water-sheds should be applied to these houses also.

The present water supply is insufficient for the growing needs of the city and it now has under consideration an additional supply from creeks and a lake in Saratoga county, to be discharged by a closed conduit into Bunn creek. In that case the water from the Bunn creek water-shed will not be needed. It has never been counted on as a reliable source of supply, as it fails at dry times when needed the most. The superintendent of the water-works, in view of these facts and of the vegetable and animal pollution, and of the deposits in the reservoir from this creek, proposes to continue the closed conduits of the present and of the proposed supply to the reservoir, and to divert the water of Bunn creek by a channel around the reservoir on the east side, emptying below the dam. Should the city grow along the west side of the reservoir, an intercepting ditch on that side could carry off any polluted drainage coming from that direction. The project seems to me to be a feasible one and worthy of serious consideration.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

RULES AND REGULATIONS FOR THE PROTECTION OF THE RESERVOIRS AND TRIBUTARIES THERETO OF THE AMSTERDAM WATER-WORKS, FURNISHING THE PUBLIC POTABLE WATER SUPPLY OF THE CITY OF AMSTERDAM.

PRIVIES ADJACENT TO LAKES, RESERVOIRS, SPRINGS OR WATER-COURSES.

First. No privy or place for the deposit or storage of human excreta shall be constructed, located or maintained within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of any lake or reservoir, or any spring, stream or water-course of any kind, the water of which when running eventually flows into the reservoir of the Amsterdam public water supply.

Second. No privy vault, pit or cesspool, or non-transportable receptacle of any kind for the reception or storage of human excreta shall be constructed, located or maintained within 250 feet, horizontal measurement, of the high-water mark of any lake or reservoir, or 130 feet, horizontal measurement, of the high-water mark or precipitous bank of any stream, spring or water-course of any kind, the water of which when running flows eventually into the reservoir of the Amsterdam public water supply.

Third. Every privy or place for the deposit of human excreta, which is constructed, located or maintained between the aforesaid limits of fifty feet and 250 feet, horizontal measurement, of the high-water mark or precipitous bank of any lake or reservoir, or fifty feet and 130 feet, horizontal measurement, of the high-water mark or precipitous bank of any spring, stream or water-course aforesaid, and from which the said excreta are not at once removed automatically by means of suitable water-tight pipes or conduits to some proper place of ultimate disposal beyond the maximum aforesaid limit (250 feet from lake or reservoir, or 130 feet from spring, stream or water-course as above described) shall be arranged in such manner that all said excreta shall be received and temporarily retained in suitable vessels or receptacles, which shall at all times be maintained in an absolutely water-tight condition, and which will admit of convenient removal to some place of ultimate disposal beyond the said maximum limit.

Fourth. The excreta collected in the aforesaid removable receptacles shall be removed and the receptacle cleansed and deodorized as often as is necessary to keep the receptacles in proper sanitary condition and to prevent an overflow of the excreta upon the soil or floor of said privy.

Fifth. The excreta so collected shall be removed in such manner as to cause the least nuisance possible, and shall be so disposed of that they cannot be washed either over the surface or through the subsoil into any lake or reservoir, spring, stream or water-course aforesaid, and shall be so placed as not to cause an offensive nuisance.

Sixth. Whenever it shall be found that, owing to the porous character of the soil, the height and flow of the surface and subsoil waters, the steepness of the slopes, or other special condition of the locality, the excremental matter from

any privy, cesspool or other receptacle for human excreta may be washed over the surface or through the subsoil into any lake or reservoir or into any spring, stream or water-course, aforesaid, without having been thereby, in the judgment of the State Board of Health, sufficiently purified, then the said privy, cess-pool or other receptacle for human excreta shall, after due notice to the owner thereof, be removed to such greater distances from said high-water marks as shall be considered safe and proper by the State Board of Health.

HOUSE-SLOPS, SINK-WASTES, LAUNDRY WATER, AND OTHER SIMILAR SEWAGE.

Seventh.— No sewage, house-slops, sink-wastes, water in which clothes or bedding have been washed or rinsed, nor any other polluted water or liquid shall be thrown or discharged directly into any lake or reservoir, spring, stream or water-course aforesaid, nor shall any such aforesaid liquid or solid matter or other polluted liquid be thrown or discharged upon the surface of the ground, or into the ground below the surface in any manner whereby the same may flow into any lake or reservoir or spring, stream or water-course aforesaid, within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of any lake, or reservoir, spring, stream or water-course aforesaid.

Eighth.— No clothes, animals, vehicles, nor anything which pollutes water shall be washed, nor shall any person bathe in any lake or reservoir, spring stream or water-course aforesaid.

GARBAGE AND REFUSE.

Ninth. No garbage or putrescible refuse of any kind shall be thrown or discharged directly into any lake or reservoir or into any spring, stream or water-course aforesaid, nor shall any such substances be placed upon or below the surface of the ground where they may be washed into any lake or reservoir or into any spring, stream or water-course aforesaid, within fifty feet of the high-water mark or precipitous bank thereof.

MANURES, COMPOSTS AND SIMILAR MATTER.

Tenth. No stable, pig-sty, barn-yard, hog-yard, hitching or standing place for horses or cattle, or other place where animal manure accumulates, and no compost or manure heap shall be located or maintained within, or so arranged and maintained that

the washings or drainage therefrom shall flow through open or covered drains within fifty feet of the high-water mark or precipitous bank of any lake or reservoir, spring, stream or water-course aforesaid.

Eleventh. No human excreta, or compost containing human excreta, shall be spread upon the surface of the ground within 250 feet of the high-water mark of any lake or reservoir, or within 130 feet of the high-water mark or precipitous bank of any spring, stream or water-course aforesaid; and no manures or composts of any kind shall be so deposited as to be washed over the surface or through the subsoil into any lake or reservoir, spring, stream or water-course aforesaid, without having undergone proper purification.

DEAD ANIMALS, VEGETABLE REFUSE AND MANUFACTURING WASTES.

Twelfth. No dead animal, bird or fish, or part thereof, nor any filthy or impure matter, nor any decayed fruit or vegetable substances, nor any waste products, putrescible matter or polluted waters from any slaughter-houses, cheese factories, creameries, cider mills, saw mills or other manufactories shall be thrown or allowed to run into any lake or reservoir, spring, stream or water-course aforesaid, nor shall they be so deposited that any portion thereof, or of the drainage therefrom shall be washed over the surface or through the subsoil into any lake or reservoir, spring, stream or water-course aforesaid, without having undergone proper purification.

CEMETERIES.

Thirteenth. No interment of a human body shall be made within 250 feet of the high-water mark of any lake or reservoir, or within 130 feet of the high-water mark or precipitous bank of any spring, stream or water-course aforesaid.

PENALTY.

In accordance with section 2 of chapter 543 of the Laws of 1885, a penalty of not less than fifty dollars nor more than $100 is hereby imposed upon any corporation, person or persons, guilty of a violation of, or non-compliance with any of the above given mandatory rules or regulations to be recovered under said act.

At the regular quarterly meeting of the State Board of Health, held on the 12th of February, 1890, in the city of New

York, the foregoing rules and regulations were made, ordained and established, pursuant to chapter 543 of the Laws of 1885, for the protection of the reservoirs and tributaries thereto of the Amsterdam water-works, furnishing the public potable water supply of the city of Amsterdam.

[SEAL.]

THOMAS NEWBOLD,
President.

LEWIS BALCH, M. D.,
Secretary and Executive Officer.

REPORT

ON

Rules for the Protection of the Water Supply of the Village of Cobleskill.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *May* 9, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I have the following report to make of my inspection of the water-shed of the Cobleskill water supply, and the accompanying set of rules to offer for the government of the same. The rules have been revised by the water commissioners of the village and are in form to be acceptable to them when approved by the State Board of Health.

The possible sources of pollution to the reservoir and its tributaries are numbered on the accompanying sketch of the water-shed and may be described as follows:

1. A barn and privy near a house and all near a ditch which runs several hundred feet to a small branch which enters the reservoir. Not much, if any, pollution enters from this source at present.

2. A house and barn near and a privy on a small surface ditch which runs but a short distance before entering the reservoir. The privy is especially dangerous in its present position.

3. A privy eighty feet from a ditch and a pig-pen on a ditch which are intended to take the surface-water to the reservoir. Both, the pig-pen especially, are sources of pollution in their present positions. The reservoir is less than 200 feet away.

4. A sheepfold built with one corner over the creek, large barns and stables on each side of the creek with the barn-yard, in which numerous cattle run, on both sides of the creek between

the barns, and a privy about seventy-five feet from the creek. The stables and yards are particularly prolific sources of pollution, and all are dangerously near the reservoir and its principal stream.

5. A saw-mill over the stream whose arrangements for keeping the saw-dust out of the stream are quite defective. While not a source of dangerous pollution, the effect is not good, and it is easy to arrange the disposal of the saw-dust so that it will not enter the stream.

6. A barn 250 feet from a branch of the main creek, and on a small ditch, also a pig-pen on a precipitous bank fifty feet from the branch. Some source of danger and should be kept in the best of condition.

7. A barn at the head of a branch and draining into it.

8. Two barns and barn-yard that drain into a small pond on the creek, and a privy on a small ditch which enters the creek above the pond near its source. All are sources of pollution only less dangerous than the others mentioned because there is a little longer line of flow before the reservoir is reached.

The accompanying rules are offered as furnishing sufficient authority to enable any case likely to arise to be dealt with. If approved by the State Board they will be put in force by the village authorities.

Respectfully submitted.

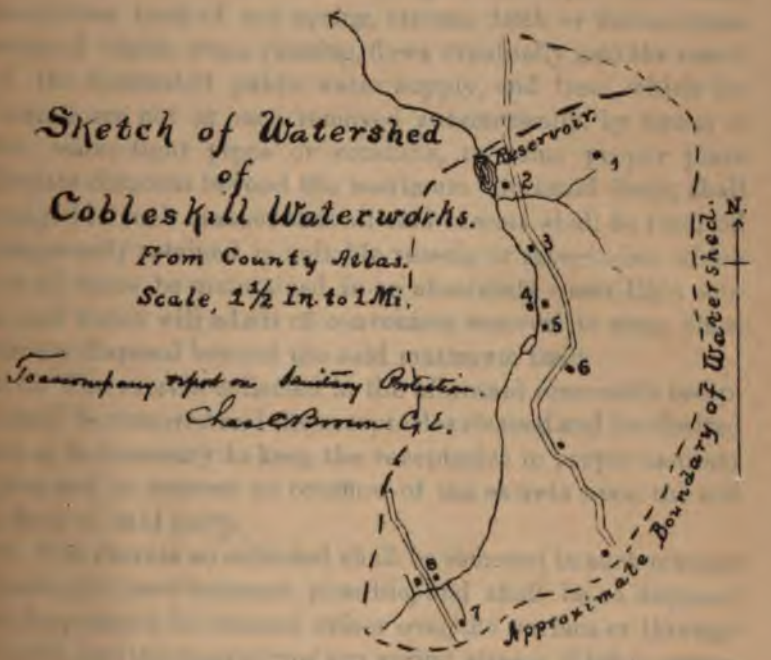
CHAS. C. BROWN,
Civil Engineer.

RULES AND REGULATIONS FOR THE SANITARY PROTECTION OF THE RESERVOIR AND TRIBUTARIES THERETO OF THE PUBLIC POTABLE WATER SUPPLY OF THE VILLAGE OF COBLESKILL.

PRIVIES ADJACENT TO RESERVOIRS, SPRINGS OR WATER-COURSES.

First. No privy or place for the deposit or storage of human excreta shall be constructed, located or maintained within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of the reservoir, or of any spring, stream, ditch or water-course of any kind, the water of which, when running, flows eventually into the reservoir of the Cobleskill public water supply.

Second. No privy vault, pit or cess-pool, or non-transportable receptacle of any kind for the reception or storage of human


Sketch of Watershed
of
Cobleskill Waterworks.
From County Atlas.
Scale, 1½ In. to 1 Mi.
To accompany report on Sanitary Protection.
Chas. C. Brown C.E.
Reservoir.
1
2
3
4
5
6
7
8
Approximate Boundary of Watershed.
N.

spring, stream, ditch or water-course, the water of which, when running, flows eventually into the reservoir of the Cobleskill public water supply, without having been thereby, in the judgment of the State Board of Health, sufficiently purified, then the said privy, cess-pool or other receptacle for human excreta shall, after due notice to the owner thereof, be removed to such greater distance from said high-water marks as shall be considered safe and proper by the State Board of Health.

HOUSE-SLOPS, SINK-WASTES, LAUNDRY WATER AND OTHER SIMILAR SEWAGE.

Seventh. No sewage, house-slops, sink-wastes, water in which clothes or bedding have been washed or rinsed, nor any other polluted water or liquid shall be thrown or discharged directly into the reservoir or into any spring, stream, ditch or water-course aforesaid, nor shall any such aforesaid liquid or solid matter or other polluted liquid be thrown or discharged upon the surface of the ground, or into the ground below the surface in any manner whereby the same may flow into the reservoir or into any spring, stream, ditch or water-course aforesaid, within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of the reservoir or of any spring, stream, ditch or water-course aforesaid.

Eighth. No clothes, animals, vehicles, nor any thing which pollutes water shall be washed, nor shall any person bathe in the reservoir or in any spring, stream or water-course aforesaid.

GARBAGE AND REFUSE.

Ninth. No garbage or putrescible refuse of any kind shall be thrown or discharged directly into the reservoir or into any spring, stream, ditch or water-course aforesaid, nor shall any such substances be placed upon or below the surface of the ground where they may be washed into the reservoir or into any spring, stream, ditch or water-course aforesaid, within fifty feet of the high-water mark or precipitous bank thereof.

MANURES, COMPOSTS AND SIMILAR MATTER.

Tenth. No stable, pig-sty, hen-house, barn-yard, hog-yard, hitching or standing place for horses or cattle, or other place where animal manure accumulates, and no compost or manure

heap shall be located or maintained within, or so arranged and maintained, that the washings or drainings therefrom shall flow through open or covered drains within fifty feet of the high-water mark or precipitous bank of the reservoir, or any spring, stream or water-course aforesaid.

Eleventh. No human excreta or compost containing human excreta shall be spread upon the ground within 250 feet of the high-water mark of the reservoir, or within 130 feet of the high-water mark or precipitous bank of any spring, stream or water-course aforesaid, and no manures or composts of any kind shall be so deposited as to be washed a less distance than fifty feet over the surface or through the subsoil into the reservoir or any spring, stream, ditch or water-course aforesaid, without having undergone proper purification.

DEAD ANIMALS, VEGETABLE REFUSE AND MANUFACTURING WASTES.

Twelfth. No dead animal, bird or fish or part thereof nor any filthy or impure matter, nor any decayed food or vegetable substances, nor any waste products, putrescible matter or polluted waters from any slaughter houses, creameries, cider mills, saw mills or other manufactories shall be thrown or allowed to run into the reservoir or any spring, stream, ditch or water-course aforesaid, nor shall they be so deposited that any portion thereof or of the polluted drainage therefrom shall be washed on the surface or less than fifty feet through the subsoil, into the reservoir of any spring, stream, ditch or water-course aforesaid without having undergone proper purification.

Thirteenth. No interment of a human body shall be made within 250 feet of the reservoir or of high-water mark or precipitous bank of any spring, stream or water-course aforesaid.

PENALTY.

In accordance with section 2 of chapter 543 of the Laws of 1885 a penalty of not less than fifty dollars nor more than $100 is hereby imposed upon any corporation, person or persons guilty of a violation of or non-compliance with any of the above-given mandatory rules and regulations, to be recovered under said act.

At the annual meeting of the State Board of Health, held on the 14th of May, 1890, at New York, the foregoing rules and

regulations were made, ordained and established, pursuant to chapter 343 of the Laws of 1885, for the sanitary protection of the reservoir and tributaries thereto of the public potable water supply of the village of Cobleskill.

THOS. NEWBOLD,
President.

LEWIS BALCH, M. D.,
Secretary and Executive Officer.

RULES

FOR THE

Protection of the Water Supply of Oneonta, N. Y.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *December* 1, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I have the following report to make of my inspection of the Oneonta water supply and the accompanying set of rules to offer for the government of the same. The rules have been revised by the board of health of the village, and are in form to be acceptable to them.

The possible sources of pollution to the reservoirs and streams are shown on the accompanying sketch of the water-shed. All the buildings on the water-shed are represented on the sketch, the houses by square dots and the outbuildings by "x." Where an outbuilding or yard is specially liable to be a source of pollution of the water it is indicated, "b" standing for a barn or stable, "by" for a barn-yard or other place where cattle are confined to small areas drained by branches of the stream, "p" standing for privy too near a branch of the stream or precipitous bank thereof. It is believed that the rules will cover all cases which are likely to arise on this water-shed. The works are owned by a private company.

Respectfully submitted.

CHAS. C. BROWN, C. E.

RULES AND REGULATIONS FOR THE SANITARY PROTECTION OF THE RESERVOIRS AND TRIBUTARIES THERETO OF THE WATER SUPPLY OF THE VILLAGE OF ONEONTA, N. Y.

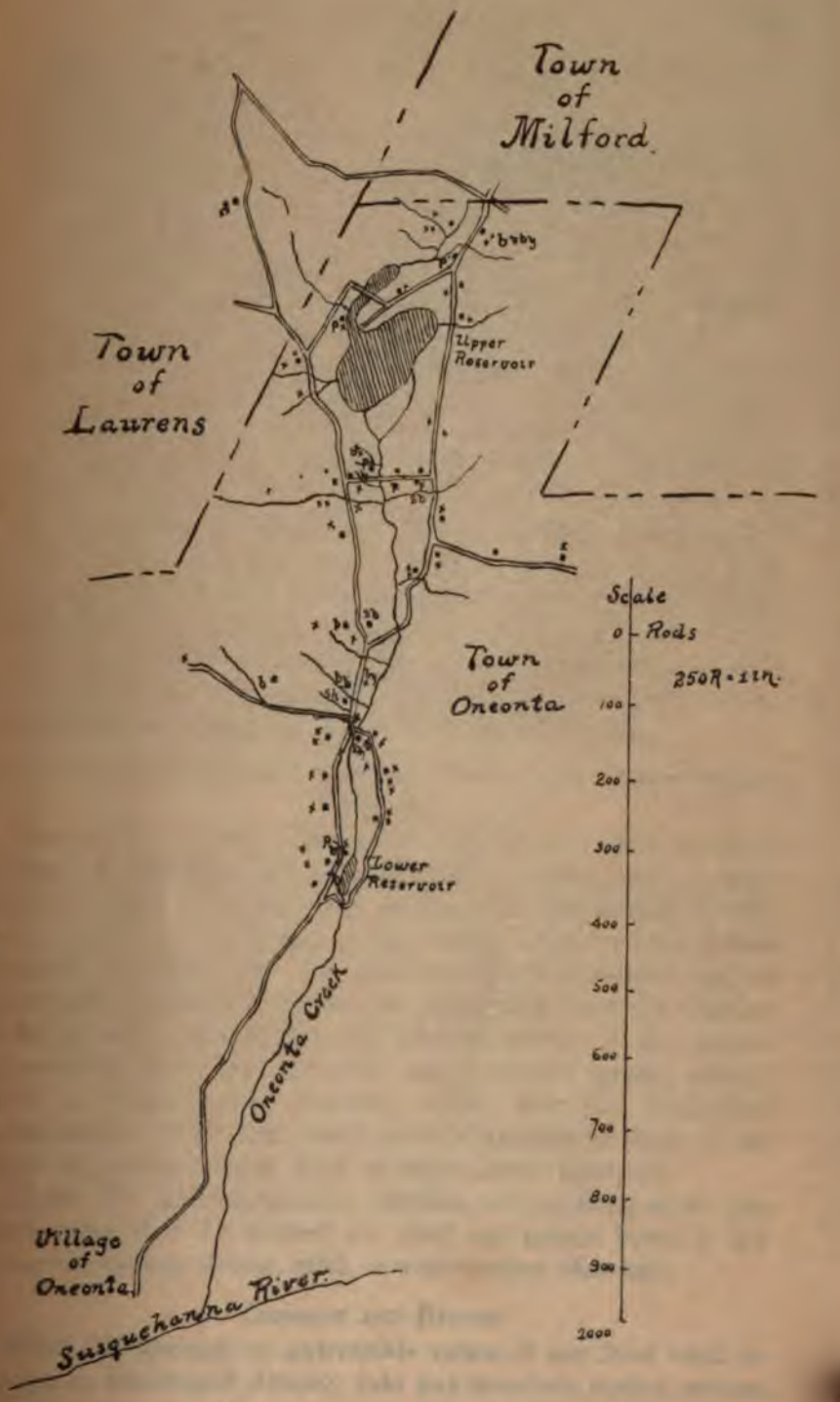
PRIVIES ADJACENT TO RESERVOIRS, SPRINGS OR WATER-COURSES.

First. No privy or place for the deposit or storage of human excreta shall be constructed, located or maintained within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of any reservoir, spring, stream, ditch or water-course of any kind, the water of which, when running, flows eventually into a reservoir of the Oneonta Water-works Company.

Second. No privy vault, pit or cess-pool, or non-transportable receptacle of any kind for the reception or storage of human excreta, shall be constructed, located or maintained within 250 feet, horizontal measurement, of the high-water mark or precipitous bank of any reservoir, or within 130 feet, horizontal measurement, of the high-water mark or precipitous bank of any spring, stream, ditch or water-course of any kind, the water of which, when running, flows eventually into a reservoir of the Oneonta Water-works Company.

Third. Every privy or place for the deposit of human excrement, which is constructed, located or maintained between the aforesaid limits of fifty feet and 250 feet, horizontal measurement, of the high-water mark or precipitous bank of any reservoir, or fifty and 130 feet, horizontal measurement, of the high-water mark or precipitous bank of any spring, stream, ditch or water-course, the water of which, when running, flows eventually into a reservoir of the Oneonta Water Company and from which the said excrement is not at once removed automatically, by means of suitable water-tight pipes or conduits to some proper place of disposal beyond the maximum aforesaid limit shall be arranged in such manner that all said excreta shall be received and temporarily retained in suitable vessels or receptacles, which shall at all times be maintained in an absolutely water-tight condition, and which will admit of convenient removal to some place of ultimate disposal beyond the said maximum limits.

Fourth. The excreta collected in the aforesaid removal receptacle shall be removed and the receptacles cleansed and deodorized as often as is necessary to keep the receptacles in proper sanitary


Town of Milford
Town of Laurens
Upper Reservoir
Town of Oneonta
Scale
0 Rods
250R = 1in.
100
200
300
400
500
600
700
800
900
2000
Lower Reservoir
Oneonta Creek
Village of Oneonta
Susquehanna River

Town of Milford
Town of Lansing
Town of Oneonta
Oneonta Creek
Susquehanna River
Village of Oneonta

condition and to prevent an overflow of the excreta upon the soil or the floor of said privy.

Fifth. The excreta so collected shall be removed in such manner as to cause the least nuisance possible, and shall be so disposed of that they cannot be washed, either over the surface or through the subsoil, into any reservoir, spring, stream, ditch or water-course of any kind, the water of which, when flowing, runs finally into a reservoir of the Oneonta Water-works Company, and shall be so placed as not to cause an offensive nuisance.

Sixth. Whenever it shall be found that, owing to the porous character of the soil, the height and flow of the surface and subsoil waters, the steepness of the slopes, or other special conditions of the locality, the excremental matter from any privy, cess-pool or other receptacle for human excreta may be washed over the surface or through the subsoil into a reservoir or any spring, stream, ditch or water-course aforesaid, without having been thereby, in the judgment of the State Board of Health, sufficiently purified, then the said privy, cess-pool or other receptacle for human excreta shall, after due notice to the owner thereof, be removed to such greater distance from said high-water marks as shall be considered safe and proper by the State Board of Health.

HOUSE-SLOPS, SINK-WASTES, LAUNDRY WATER AND OTHER SIMILAR SEWAGE.

Seventh. No sewage, house-slops, sink-wastes, water in which clothes or bedding have been washed or rinsed, nor any other polluted water or liquid shall be thrown or discharged directly into a reservoir or into any spring, stream, ditch or water-course aforesaid, nor shall any such aforesaid liquid or solid matter or other polluted liquid be thrown or discharged upon the surface of the ground or into the ground below the surface in any manner whereby the same may flow into any reservoir, spring, stream, ditch or water-course aforesaid, within fifty feet, horizontal measurement, of the high-water mark or precipitous bank of any reservoir, spring, stream, ditch or water-course aforesaid.

Eighth. No clothing, animals, vehicles, nor anything which pollutes water shall be washed, nor shall any person bathe in any reservoir, spring, stream, ditch or water-course aforesaid.

GARBAGE AND REFUSE.

Ninth. No garbage or putrescible refuse of any kind shall be thrown or discharged directly into any reservoir, spring, stream,

ditch or water-course aforesaid, nor shall any such substances be placed upon or below the surface of the ground where they may be washed into any reservoir, spring, stream, ditch or water-course aforesaid, within fifty feet of the high-water mark or precipitous bank thereof.

MANURES, COMPOSTS AND SIMILAR MATTER.

Tenth. No stable, pig-sty, hen-house, barn-yard, hog, or duck-yard, hitching or standing place for horses or cattle, or other place where animal manure accumulates, and no compost or manure heap shall be located or maintained within, or so arranged and maintained that the washings or drainings therefrom shall flow through open or covered drains within fifty feet of the high-water mark or precipitous bank of any reservoir, spring, stream or water-course aforesaid.

Eleventh. No human excreta or compost containing human excreta shall be spread upon the ground within 250 feet of the high-water mark or precipitous bank of a reservoir, or within 130 feet of the high-water mark or precipitous bank of any spring, stream, ditch or water-course aforesaid, and no manures or composts of any kind shall be deposited so as to be washed a less distance than fifty feet over the surface or through the subsoil into any reservoir, spring, stream, ditch, or water-course aforesaid, without having undergone proper purification.

DEAD ANIMALS, VEGETABLE REFUSE AND MANUFACTURING WASTES.

Twelfth. No dead animal, bird or fish or part thereof, nor any filthy or impure matter, nor any decayed fruit or vegetable substance, nor any waste products, putrescible matter or polluted waters from any slaughter-house, creamery, cider mill, saw mill or other manufactory shall be thrown or allowed to run into any reservoir, spring, stream, ditch or water-course aforesaid, nor shall they be so deposited that any portion thereof or of the polluted drainage therefrom shall be washed on the surface or less than fifty feet through the subsoil, into any reservoir, spring, stream, ditch or water-course aforesaid, without having undergone proper purification.

Thirteenth. No interment of a human body shall be made within 250 feet of the high-water mark or precipitous bank of any reservoir, spring, stream, ditch or water-course aforesaid.

MANAGEMENT OF THE RESERVOIRS.

Fourteenth. The reservoirs of the Oneonta Water-works Company shall not be unnecessarily drawn down during the warm months, but shall be kept as deep and as nearly at a uniform level as possible, to prevent the pollution of the water with dead organic matter.

Fifteenth. No filter or screen shall be used when in a filthy condition and liable to pollute the water in the main; and no filter or screen shall be used at the head of the main which cannot be constantly examined and cleaned.

PENALTY.

In accordance with section 2 of chapter 543 of the Laws of 1885, a penalty of fifty dollars is hereby imposed upon any corporation, person or persons, guilty of a violation of, or non-compliance with any of the above given mandatory rules or regulations; to be recovered under said act.

At a quarterly meeting of the State Board of Health, held on the 11th of December, 1890, at the Capitol, in the city of Albany, the foregoing rules and regulations were made, ordained and established, pursuant to chapter 543 of the Laws of 1885, for the sanitary protection of the reservoirs and tributaries thereto of the water supply of the village of Oneonta.

THOS. NEWBOLD,
President.
LEWIS BALCH, M. D.,
Secretary and Executive Officer.

ONEONTA, N. Y., *December* 29, 1890.

Pursuant to chapter 543 of the Laws of 1885, as amended by chapter 52 of the Laws of 1888, I, Hartford D. Nelson, county judge of the county of Otsego, do hereby approve of the foregoing rules and regulations made, ordained and established by the State Board of Health, on the 11th day of December, 1890, for the sanitary protection of the reservoirs and tributaries thereto of the water supply of the village of Oneonta.

HARTFORD D. NELSON,
Otsego County Judge.

Dated ONEONTA, *December* 27, 1890.



GENERAL SANITARY INVESTIGATIONS.

REPORT

ON

A System of Sewerage for the Village of Stamford, N. Y.

By Charles C. Brown, C. E.

Union College,
Schenectady, N. Y., *March* 8, 1890.

Lewis Balch, M. D., *Secretary State Board of Health, Albany, N. Y.:*

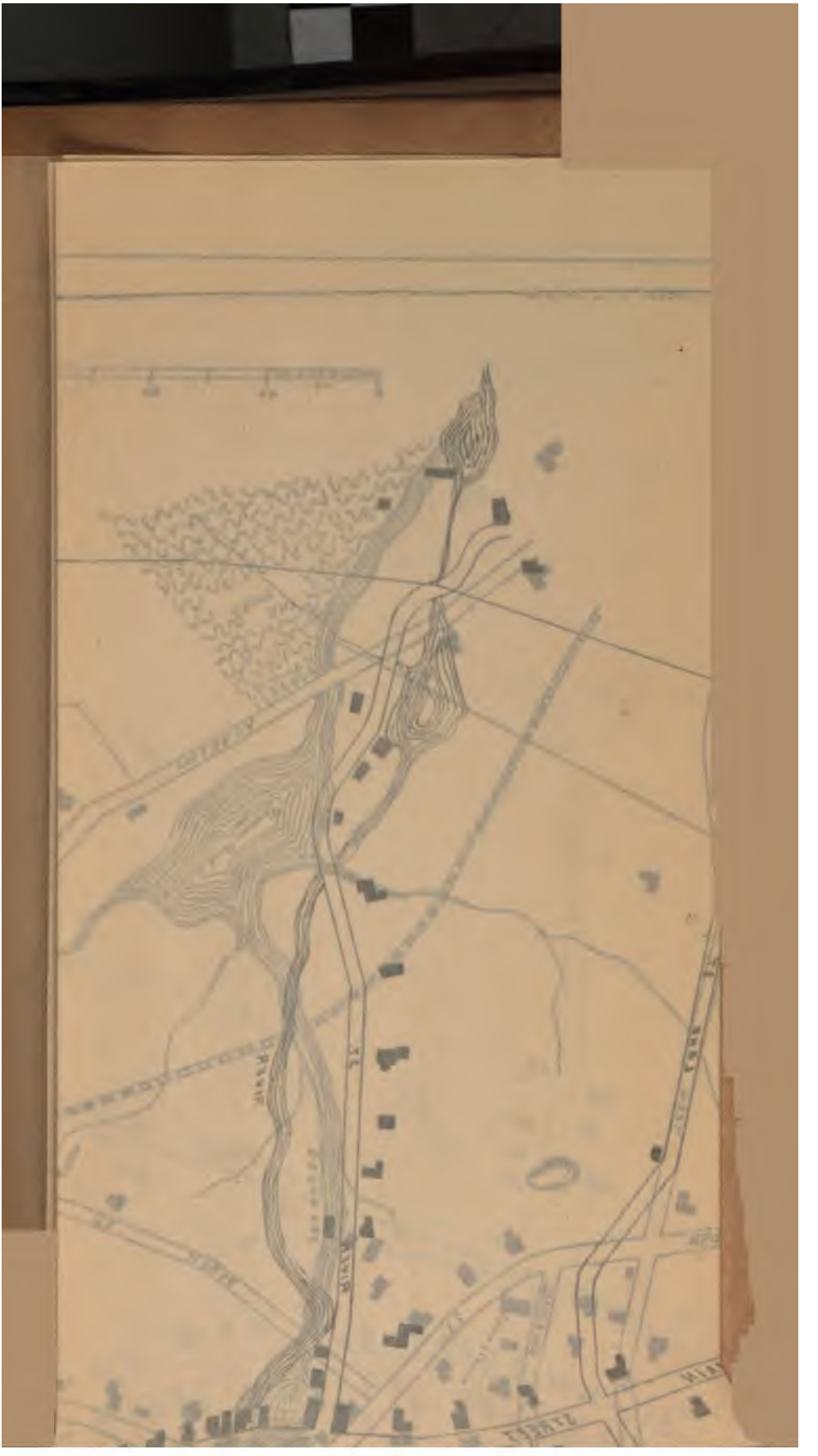
Sir.— I have the following report to make of the results of my inspection of the village of Stamford with reference to the practicability of introducing a system of sewers at a moderate cost.

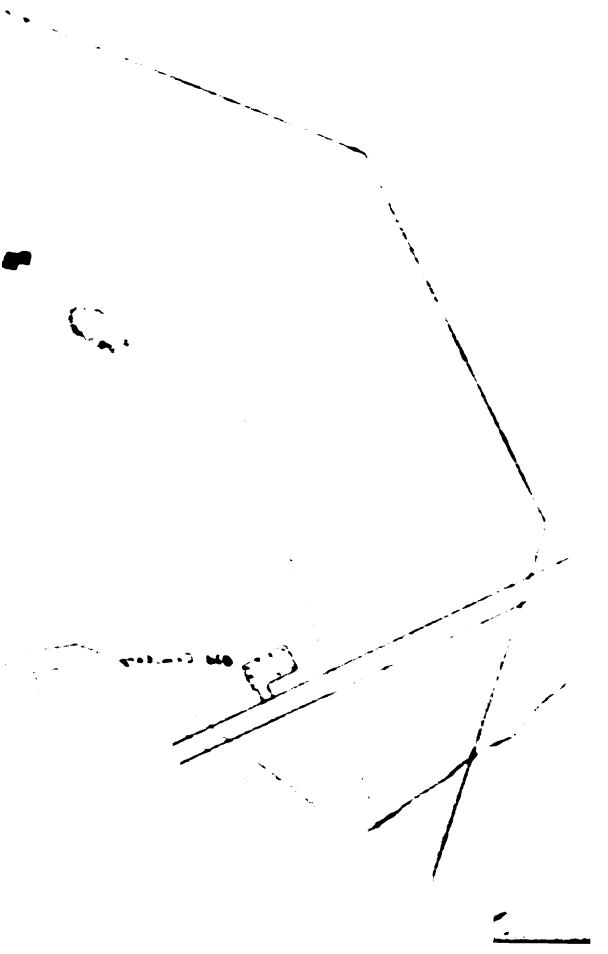
I find the village to be quite small, but to have quite an accession to its population during the summer time on account of its attractions as a mountain resort. As it is increasing in popularity, a maximum population in the summer season of about 2,000 should be allowed for, though the present population of the village is about 800 (522 in 1880). The village is located on quite a steep slope so that small pipes, six and eight inches in diameter will carry all legitimate sewage to the outlet pipes, if street drainage is excluded. The size of outlet pipes will depend somewhat upon the location chosen for outlet or disposal works and upon the grades obtainable. I have thought it best for this rough preliminary estimate to compute them as twelve inches in diameter.

The final discharge must be into the Delaware river, here a small stream with a dam and mill pond just below the village, the race from which reduces materially the flow of water in the river proper from the dam to the tail race, a mile, more or less, below the village. Nor is the river here of such a size that the discharge of an appreciable amount of sewage can be guaranteed to

produce no nuisance. It seems quite necessary, therefore to remove to a certain extent the impurities from the sewage. The solids can be removed by a process of sedimentation, but the clarified sewage should, in this case, be discharged into the river below the tail race to prevent all possibility of nuisance. The cost of the outlet pipe from the sedimentation tanks to the river below the tail race would pay for the additional tanks and apparatus or attention necessary to produce a thorough chemical purification of the sewage, and this treatment will permit the discharge of the sewage into the stream at any point without danger of nuisance or undue pollution of the water for other than drinking purposes. The water will not be anywhere injuriously affected for use by cattle by this purified effluent, nor for human use for any great distance below the outlet. The sludge from the tanks after disinfection or deodorization can be spread on the land near the works and ploughed in for fertilizer.

A general plan for the system of sewers cannot be definitely laid down without profiles, but the slopes are in general such that it seems probable that the most economical system will be obtained by constructing two outlet sewers, assumed as twelve inches in diameter, from the disposal works, which will be located near the river and railroad, east of the one and north of the other. One of these outlet sewers should extend along the railroad to Main street, and the other across the fields west of South street and east of the river to Main street, and thence to the intersection of Main, River and Harper streets. All other sewers can discharge into these two outlets, and many houses on Main and Academy streets can discharge directly into the first of the outlets described. I cannot give thoroughly reliable estimates of cost with the information that I at present possess, since there is no survey with levels on which to base them. A system with the sizes of pipe mentioned above can be constructed to reach all parts of the village reached by the water supply (all of the village to which the system can be of direct benefit), for about $16,000 to $18,000. One that will reach all places needing sewerage at present can be constructed for about $12,000 to $14,000. In each of these sums about $9,000 is estimated for the two outlets above described and the disposal works, the remainder being for the lateral sewers to connect with them. The outlets and disposal works are assumed to be constructed





sufficiently large for the whole system, and their cost will not be increased by future additions to a partial system, so that it may be advisable to put in at first these outlets and the disposal works and sewers enough to reach places for which sewerage is a present necessity, and then extend the system year by year as the needs or desires of other portions of the village increase. It should not be an extremely difficult matter for the sewer commissioners to so regulate the assessments of cost on village and on property owners as to make them equitable. It is believed that these figures will not be exceeded for a good system well constructed on the principles above stated, and it is possible that a detailed survey will show that they can be somewhat reduced. They include the cost of pipe and laying, with a full supply of man-holes and flush-tanks, and disposal works which will do thoroughly the work required of them with comparatively little attention. The only expenses in construction additional to these figures will be the laying of house connections from the street to the house for each householder desiring to make such connection. Where alternative figures are given above, the system costing the larger sum will require the shorter house connections. Sufficient attention must be given to the disposal works during the summer season to insure their being kept clean and in good condition, taking a portion of the time of one man each day during that season. If the tanks are protected from frost, much less attention will be necessary during the winter, when the amount of sewage will be less and will be more diluted. By giving the works more personal attention nearly $2,000 of the first expense of the disposal works can be taken off. A comparison of the saving in interest on this cost and the additional wages of attendants should be made to show their relative economy.

Chapter 375 of the Laws of 1889 gives the village trustees power to appoint sewer commissioners to procure the necessary surveys and plans, and decide as to the method of construction, the amount, etc., and after proper vote or petition to proceed with the construction.

There is no doubt that a portion of the village is in great need of sewerage and a system of sewage disposal. The village is a popular summer resort, and as such must be more than ordinarily careful in its treatment of these matters, especially in the summer time when the population is largely increased and the danger of

nuisance is greatly increased on account both of the season and of the greater amount of drainage. No very noticeable troubles have yet occurred, though there have been some complaints of nuisances caused by methods of disposal in use. As the number of hotels and summer boarding-houses increases, these complaints will become more frequent, and the ill effects of insufficient methods of disposal of sewage will become intensified. The village is, therefore, quite right in agitating the subject at this time, and a good system of sewerage and sewage disposal should be constructed soon. Whether they shall be constructed as a whole or in part with provision for additions in future years, is a matter for the sewer commissioners, when appointed, to decide.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

REPORT

ON

Sewage Disposal of Jamestown, N. Y.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *June* 16, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I have made the following report to the board of public works of the city of Jamestown, upon their request for advice as to the manner of disposal of the discharge from a system of sewers which the city proposes shortly to build:

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *June* 16, 1890.

M. M. SKIFF, Esq., *Secretary Board of Public Works, Jamestown, N. Y.:*

SIR.—I have the following report to make of my investigation of the question of the disposal of the discharge from your proposed system of sewers. There is evidently no difficulty in getting the sewage down to the level of the outlet, and with the separate system of sewers, which you intend constructing, the amount of sewage to be taken care of will be reduced to a minimum.

The most convenient place of discharge is of course the outlet to Chautauqua lake; but this is a small stream, and the question of the production of a nuisance by the discharge of sewage into it must be discussed.

1. Will the discharge of sewage into the stream be a source of pollution to any water supply of village or city? The outlet flows nearly four miles to a junction with Cassadaga creek, which is a small sluggish stream. After about eight miles flow from Jamestown, Conewango creek is reached. Then, after about twenty-five miles, the Allegheny river; and after about seventy-five miles,

Oil City is reached, which latter is almost the first place with any considerable population, and is the first place using the Allegany river as a source of water supply. I think we may therefore leave the question of pollution of water supply out of the consideration.

2. Will the discharge of raw sewage into the stream produce a nuisance at or below the place of discharge? There are within the city limits three dams across the outlet which back up the water for greater or less distances. The upper one of these is just above the Erie railroad depot, and is used as a storage place for logs as well as for the supply of water to the factories. This makes the dam an exceptionally bad place into which to discharge sewage, as the circulation of water is greatly impeded by the logs as well as being reduced by the comparative stagnation of the water in the dam. I understand that this stagnation is still further increased in times of lowest water, by the necessity of shutting down even the water power having first right for some hours a day. This happens often when the nuisance from discharge of sewage is greatest on account of the season of the year. There is sufficient evidence that a nuisance would be produced in the nuisances already produced by the discharge of sewage from small private sewers into the mill pond and into the race running by the railroad station. The discharge of additional sewage into the second pond would be attended by a similar nuisance, but of greater dimensions on account of the previously polluted condition of the water. Discharge into any dam below would be simply transferring the nuisance further down stream. Below the city are three dams on the stream, and when the Cassadaga creek is reached we have a small sluggish stream upon which the sewage would have a detrimental effect. Three independent estimates of the amount of water flowing in the stream at the time of minimum flow give results varying from 1,500 to 1,700 cubic feet a minute. If we accept Mr. R. Hering's estimate of the amount of dilution necessary for sewage to prevent nuisance and evil effects upon aquatic life, 150 to 200 cubic feet a minute of flow in the stream will be necessary for every 1,000 population whose sewage is discharged into the stream. Were there no dams in the stream it would provide for the dilution of the sewage from but 7,500 to 10,000 people. When the entire population is served by the sewers it will therefore be necessary to remove the impurities from the sewage to a greater or less extent before it is discharged into the

stream. It will probably be sufficient to remove the matters held in suspension by a process of sedimentation aided by treatment with some cheap chemical.

It is intended to construct but a portion of the system of sewers at this time, I understand, and the amount to be constructed will serve but a part of the population, so that it may not be necessary to construct these sedimentation works until some future date; but the ultimate necessity of constructing them should be kept in mind, and the plans should be so drawn that the works can be constructed without the necessity of undoing any of the work previously done. The circumstances are such that this can be done.

The condition of the dams within the city limits is such that I believe it will not be advisable to discharge any sewage into them even temporarily as the risk of nuisance is too great. In addition, it will be necessary, in order to properly serve the district about Marvin street to place the outlet sewer so low that it can not discharge into the stream above the first dam, and it will be better, probably, to keep the outlet so low that it cannot well discharge into the stream above the second dam. The lower end of the outlet sewer shall be kept as high as possible, that the disposal works may be arranged for when needed, below the third dam, or, at most, just below the fourth dam, so that the expense for the long outlet pipe can be kept as low as possible. The grade of the outlet sewer should not be reduced to such a figure that it will be necessary to construct a brick sewer for the lower portion of the way. With the sewage only to be taken care of, I believe you can select a grade upon which to lay the sewer such that some size of vitrified sewer pipe will carry it. It will not be very difficult nor expensive to construct a line of outlet sewer that will serve both sides of the stream, and the conditions are said to be in general favorable for the economical construction of the lateral sewers, so that it is possible for the city to obtain a complete system of sewerage at a low cost. That a system is needed in some portions of the city is quite evident.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

REPORT

ON THE

Disposal of Sewage from the State Institution for the Blind, at Batavia, N.Y.

By Emil Kuichling, C. E.

Rochester, N. Y., *February* 24, 1890.

Dr. Lewis Balch, *Secretary of State Board of Health:*

Sir.— In relation to the disposal of the sewage from the State Institution for the Blind at Batavia, N. Y., the undersigned begs leave to submit herewith a brief statement of the conclusions reached after an inspection of the premises, in company with yourself and several members of the board of trustees of said institution, made on the twenty-second inst.

Report.

The State Institution for the Blind, at Batavia, is situated on the crest of a high ridge running easterly and westerly in the northern part of the village. To the south the surface of the ground slopes rapidly towards a small natural water-course, which flows westerly across the village and discharges into Tonawanda creek; while to the north, a similar rapid slope of the surface terminates soon in an extensive flat depression, which assumes the character of a swamp for a considerable area, beginning at a point about 800 feet northwest from the institution. This swamp stretches to the north and east for a long distance, with its ultimate outlet presumably to the east, although no definite information on this point could be elicited, and the time available did not suffice for a personal examination of the territory; but it is said that a portion of the drainage waters accumulating in this large basin escapes by a circuituous route through a certain ditch into the

aforesaid small natural water-course near the northeastern corner of the village, and thence westerly through the village to Tonawanda creek. In dry seasons, however, no such discharge from the swamp occurs, and the water level therein is reduced only by the slow process of evaporation.

Some years ago, the sewage from the institution was allowed to flow directly into the swamp, as indicated in the diagram facing page 130 of the fourth annual report of your Board; but as this method of disposal gave rise to complaint, it was recently modified by discharging the crude sewage into a certain open ditch running in a northeasterly and easterly direction from the mouth of the sewer through the low lands belonging to the institution, and terminating in the drainage ditch previously mentioned. By this means the sewage no longer flows into the swamp, except when the latter becomes flooded and sets the water back into said new ditch over lands otherwise dry and tillable; but, on the other hand, a fresh nuisance has thereby been created in the system of ditches, by reason of the lodgment of sewage matter upon the beds of these open channels, wherein both the fall and the flow is far too small to admit of the safe removal of the foul liquid wastes in such manner.

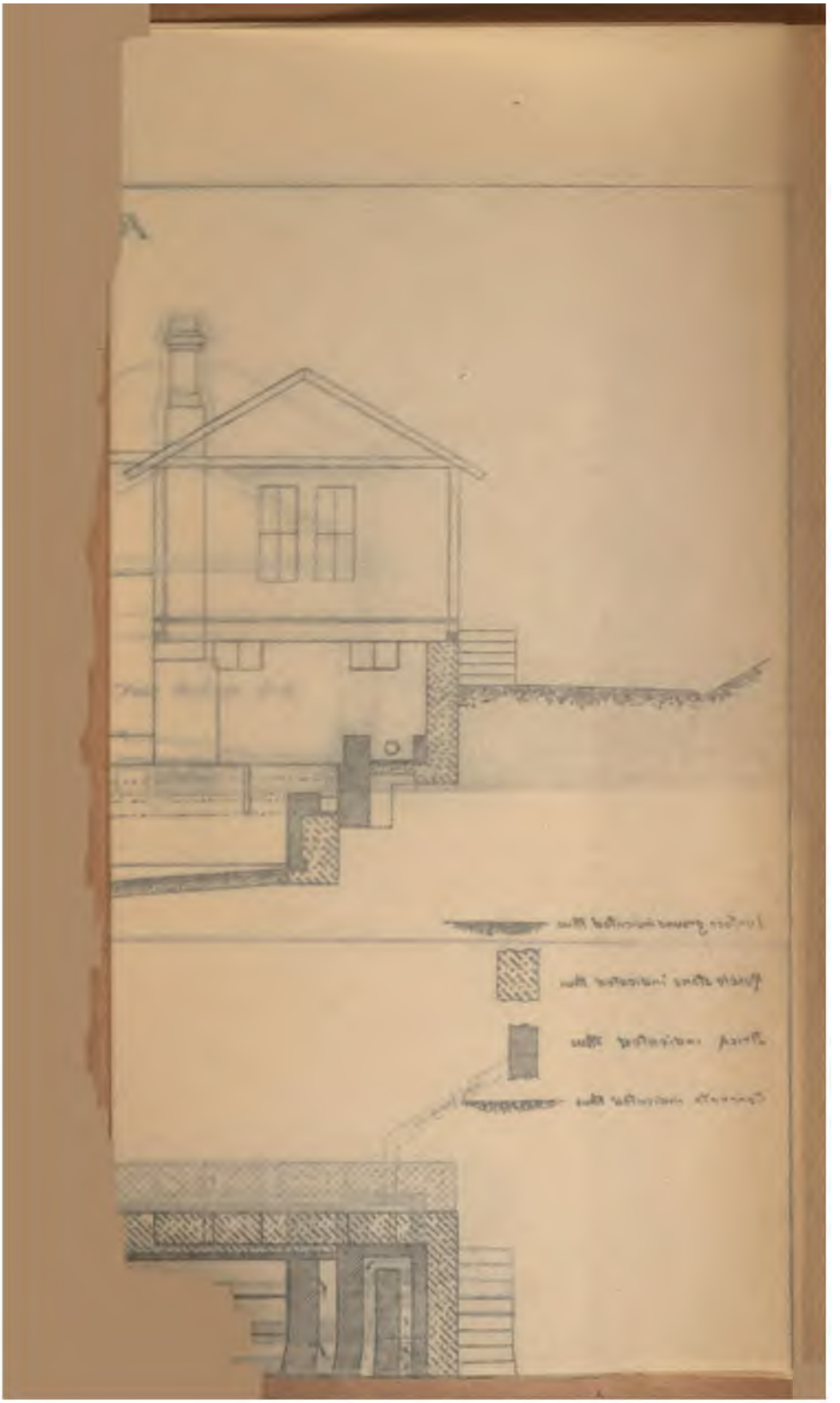
The question now arises how the sewage from the institution can be properly and economically disposed of. In reply to this, it may be stated that three methods should be considered, as follows: (1.) connection with the sewers now existing in the village; (2.) an independent discharge or outlet into Tonawanda creek; and (3.) a similar outlet to the east into a different water-shed. The village sewerage is, so far as can be ascertained, quite defective, and it is therefore not expedient to invite complication with the village authorities by discharging large quantities of foul wastes from the State institution into sewers whose mode of construction and exceedingly flat grades give promise of insufficient velocity, and hence also of disposition of putrescible matter therein; furthermore, as the outfall of the village sewers is Tonawanda creek, which has a relatively small and sluggish flow during a large portion of the year, it is highly probable that the discharge of a considerable quantity of crude sewage will prove objectionable to riparian owners below the village, and thus lead to annoying litigation, to which the State institution would, in this case, necessarily become a party, as also

to bearing some proportion of the expense of treating the combined sewage flow, whenever the same may be ordered by the courts. In view of these contingencies, and of the further fact that nearly a mile of new sewer would be required to make connection with a suitable existing village sewer, this method of disposal cannot be recommended.

The second method of disposal, by an independent sewer running westerly and southerly directly into Tonawanda creek, involves also the construction of a line of new sewer about one mile in length, the greater portion of the distance being in public highways; but here again the danger of polluting a natural water-course with crude sewage is encountered, and it will therefore be expedient to undertake at once a thorough process of clarifying the sewage before discharging it into the stream. This treatment of the sewage can readily be performed on the institution grounds under the direction of the superintendent, and without undue expense for either attendance or chemicals, etc., and the precipitated solid matter can readily be utilized as manure upon the agricultural lands belonging to the establishment, while the clarified effluent water would escape through said proposed new sewer into Tonawanda creek, where it will cause no offense, inasmuch as the waters of this stream are not used for household purposes at any point below Batavia.

The third method of disposal is at present under investigation by the State Engineer, and hence little further thereupon need be said here, except that some process of sewage treatment must be resorted to in this case also, while the distance required for the effluent channel is said to be considerably greater than by the aforesaid route to Tonawanda creek. It should be stated explicitly, however, that the undersigned has no definite knowledge of the plans and recommendations of the State Engineer in the premises, and does not, therefore, presume to offer any criticisms thereon, or to present any other remarks than those made above.

It will thus be apparent that no safe outfall for the crude sewage from the institution is available within reasonable distance, and that some method of treating such sewage should be adopted before allowing it to escape. Experience with subsurface irrigation has demonstrated that the coarser solids in the sewage must be excluded from the small absorption tile, and that, therefore, a preliminary process of sedimentation and maceration of



the sewage is absolutely necessary to avoid obstructions in the small pipes; also, that the systems of absorption tile and underdrains require more or less attention and annual expense for proper maintenance. From what was said as to the character of the soil, and the necessity for removing the drainage waters from the depression above described in order to avoid contributing to the malarial exhalations therefrom, it will be found that the expense of constructing and maintaining a complete system of sewage disposal by subsurface irrigation will be about as great as if the sewage was treated chemically, and the effluent discharged directly into Tonawanda creek, as above set forth; and since the chemical treatment of the sewage can be conducted in a very simple manner without causing offense in any respect, this process is therefore recommended in the present case.

From the information concerning the use of water in the institution received from the superintendent, it is estimated that the maximum sewage flow will be about 1,250 gallons per hour and will amount to about 10,000 gallons per day, this being based upon an average consumption of fifty gallons per day for each of the 200 officers and inmates of the institution. To deal with this quantity satisfactorily will require treatment works costing about $6,000, and a further sum of about $6,500 for constructing an effluent sewer one mile long to Tonawanda creek, and for making certain alterations in the grade of the present institution sewer, thus giving a total expenditure of $12,500, which includes a moderate sum for securing right of way through private lands.

Little can now be said as to the exact route of the sewer for the effluent water, as this must be determined by further surveys and examinations; and as the importance of this matter was fully pointed out to the trustees on the date mentioned, no further reference thereto appears necessary.

Respectfully submitted.

EMIL KUICHLING,
Civil Engineer.

[redacted]

[redacted] Beach Hotel.

[redacted]

[redacted] Long Beach,

[redacted] investi-
[redacted] July
[redacted]

[redacted] 16, 1890.

[redacted]

[redacted] officer of
[redacted] sewers and
[redacted] will furnish
[redacted] the board
[redacted] nuisance
[redacted] present
[redacted] before Thursday
[redacted]

[redacted] WILLIAM H. HUTCHINSON, M. D.,
[redacted] Health.

[redacted] with the following
[redacted] in the matter

[redacted], L. I., July 16, 1890.

To the Board of Health of Town of Hempstead:

[redacted] a number of complaints from
[redacted] to the sewerage system now in use
[redacted] I have investigated the same. I find the sewer
[redacted] through and from the hotel and cottages, nearly a mile in

length, uneven and of not sufficient fall to admit of proper drainage. The height of sewer from floor at extreme west end, a distance of nearly 600 feet, is thirty-eight inches. In the middle of the hotel it is forty inches. The pipe varies from eight inches to twelve in diameter. The pipe leading through the hotel is made of iron with leaky joints; and the pipe outside, leading through the sand is made of a porous composition that admits of absorption and retention of gases. This pipe outside is in some places perfectly level, while in others it runs up hill and lies exposed throughout the most of its extent. The material and size of the pipe is such that it will not admit of any force being used to drive sewage matter through it. There are evidences of breaks and disconnections of the pipe, as shown by the excrement deposited on the sand in large quantities. This pipe extends to the west end of the beach and there empties into a creek and discharging its filth on a number of oyster beds, the owners of which have complained of the same. A force of water to drive this matter through the pipes is occasionally used, which must of a necessity separate or break the same. In the basement of the hotel the floor is in a rotten and dangerous condition. The floor beams rest upon the sand and a number of sinks empty in the sand under this floor. This, together with the leakage in the sewer pipe, makes a dangerous combination of foul gases. There is a females' water-closet in this basement with sixteen compartments, leaking at the bottom of traps and with a leak at the junction of sewer. The traps are not ventilated. There is also a males' water-closet in this basement with sixteen compartments and ten urinals, with only three water tanks for the same. The closets are all full and stopped up with foul matter, the urinals are all leaking and the pipes bent and mashed. There are only two water tanks for the urinals. The traps are not ventilated throughout the house. This, gentlemen, is the condition of affairs as I found them at Long Beach after thirty days from the time I served them with a notice to remedy the same. I consider the present sewerage system inadequate and impracticable, and shall insist on a change being made before they are allowed to again open the hotel for the reception of guests.

"Very respectfully.

"JAMES A. HUTCHESON, M. D.,

"*Health Officer, Town of Hempstead,*"

"*To the Board of Health of the Town of Hempstead, Queens County, N. Y.:*

"GENTLEMEN.—Your committee do respectfully report that they have carefully examined the plumbing and sanitary condition of the hotel at Long Beach, and the same has been put in a passable condition. The floor of the hotel in the basement still remains in a rotten and unhealthy condition. As to the sewer leading from the cottages and hotel, we find the same about one mile in length. About 500 feet from where the sewer empties into the bay, we find a break about 150 in length through which the sewage finds its way through a ditch cut in the sand emptying itself upon the shores and bars of the public waters in which there are numbers of oysters planted, thereby becoming a public nuisance and being a violation of the health laws.

(Signed,) "EDWARD N. TOWNSEND,
"VAN WYCK HEWLETT,
"JAMES A. HUTCHESON,
"*Committee.*"

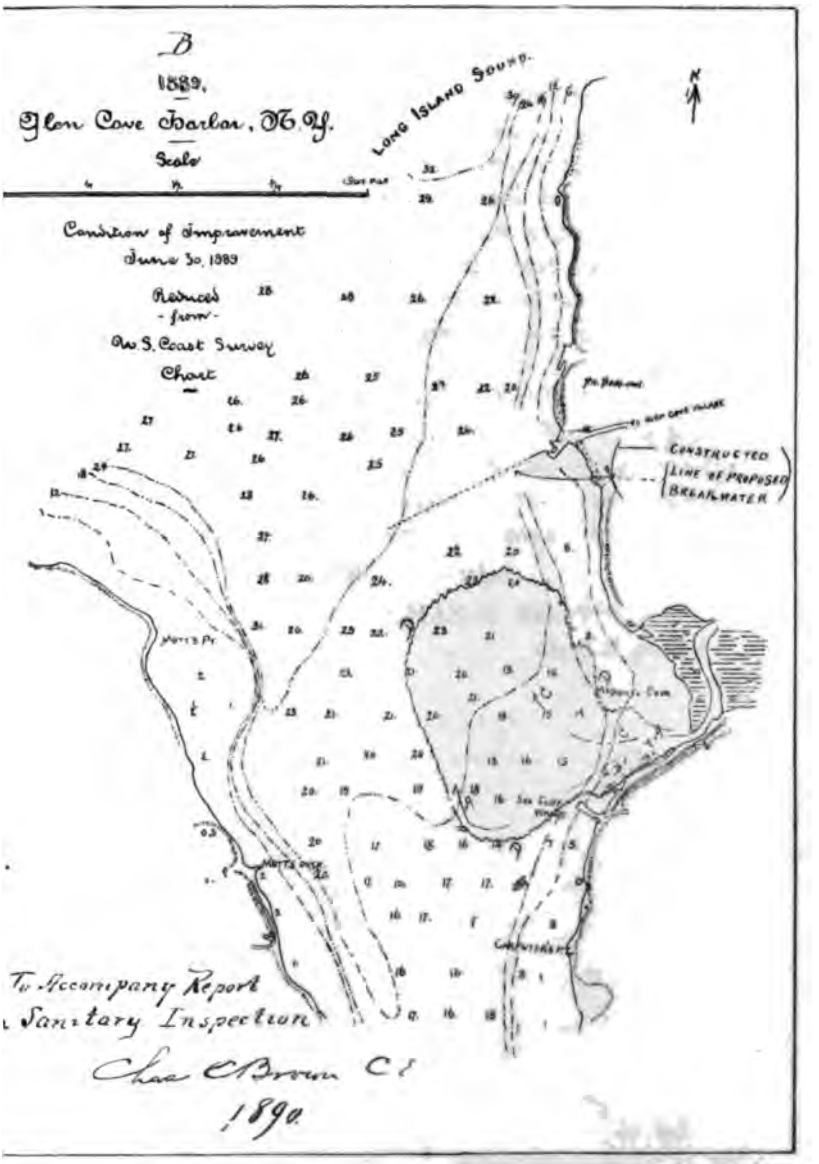
"Dated *July* 12, 1890."

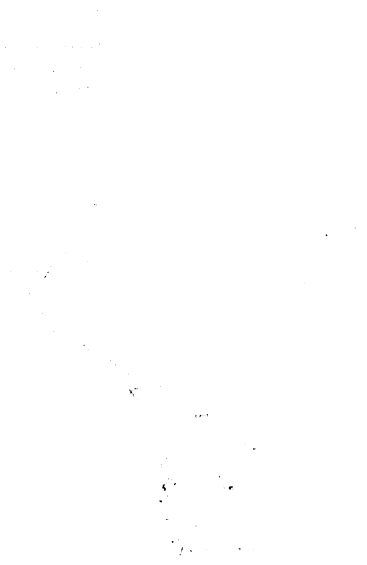
My own inspection of the premises showed the practical correctness of the foregoing reports. At least one leaky pipe was noticed still remaining, and one or two connections were not yet provided with traps, otherwise the internal plumbing, while not of the most modern and approved patterns was in a "passable condition." The rain-water leaders from the portico on the south side of the building run directly to the sewer without visible traps. The upper ends of these leaders are along the eaves of the portico, and the breeze from the sea must carry the sewer gases into the rooms on the second and third floors of the building. One odorous water-closet or urinal was found in the wash-room off the bar-room, and one or two leaky joints. The basement floor is in a dangerous condition from the unsteadiness due to rottenness and insufficient support. The sand is but a short distance below the boards, and I did not hear of any injuries to employés from falls due to the bad condition of the floor.

The outlet of the sewer upon or near oyster beds is a nuisance and a violation of the laws for the protection of oyster beds. The open discharge of the sewage produces an effluvium nuisance in the neighborhood which must be very obnoxious to persons whose

SEA CLIFF




B
1889.
Glen Cove Harbor, N.Y.
Scale
LONG ISLAND SOUND
N
Condition of Improvement
June 30, 1889
Reduced
- from -
U.S. Coast Survey
Chart
CONSTRUCTED
LINE OF PROPOSED
BREAKWATER
Morris Pt.
To Accompany Report
Sanitary Inspection
Chas C Brown C.E
1890.



business takes them to the neighborhood. I would refer to chapter 414 of the Laws of 1885, for the law prohibiting the discharge of refuse matter and sewage into the waters of Long Island.

The defects in plumbing mentioned above, and others, if any, like them are easily remedied and should be. Purification of the sewage to an extent required by the law should be resorted to both to prevent a violation of the law, and as a measure to preserve the public health and comfort. Some rearrangement of the outlet sewer will be necessary, and there will be some expense attending the process of purification, but the expense attending the violation of the law if any one takes interest enough in the matter to see that it is enforced will be obviated, and the health of the neighborhood, including that of the guests at the hotel, will have an additional and invaluable safeguard. I am sure that there must be some misunderstanding as to what is desired of the hotel authorities by the board of health, or the desired improvements would be made at once, they are so obviously for the benefit of the hotel itself, and the disposition of the owners to comply with sanitary requirements is so openly expressed.

Respectfully submitted.

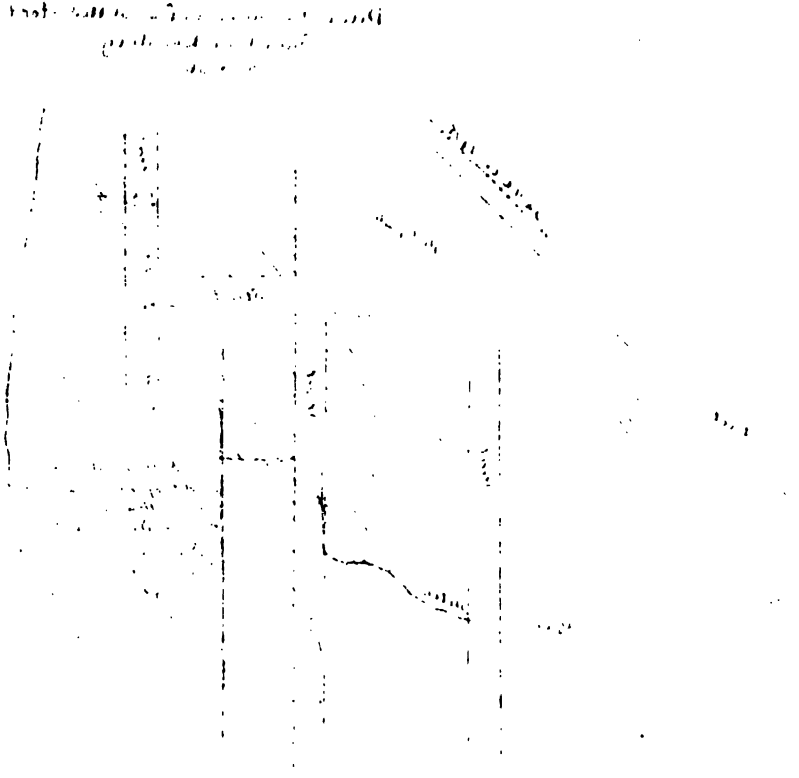
CHAS. C. BROWN,
Civil Engineer.

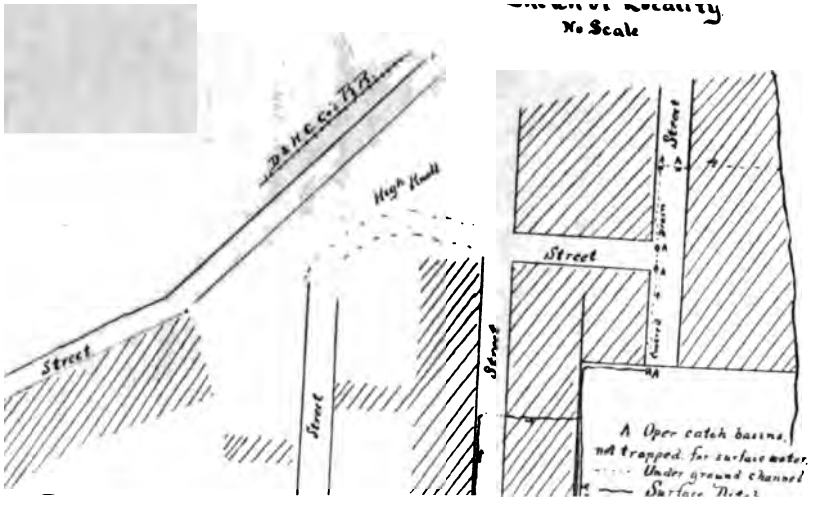
Sanitary Inspection c

SCHOOL OF
SCHENECTADY,

LEWIS BALCH, M. D., *Secretary State I*
N. Y.:

SIR.—I have the following report t
Waterford on Saturday. In company
health I visited the localities of which c
and made a thorough inspection of the
drains, and as complete an examinatic
drains as seemed necessary. The accom
not drawn to scale, will show the relative
show the course of drainage. Almost all th
drainage channel, forty or more in numb
This drainage channel with its branch
throughout its upper portion, as indicat
charges into a stone drain running alon
under-ground, as indicated by dotted lir
constructed to carry only the surface wa
is entirely unfit to carry sewage. Conn
from houses along its




No Scale
D & H C. & I. R.R.
High Wall
Street
Street
Street
Street
Street
A Oper catch basins
not trapped for surface water
Under ground channel

the manner of procedure. The area is in the town of Waterford, outside the village limits, so that it is not at present possible to bring the section into the village sewer system. There is no practical difficulty in the way of constructing the sewer except the legal one as to the method of getting the sewer in and assessing the benefits. It is quite probable that this difficulty is insurmountable. The only course that I can see open for the board of health is to abate the nuisance by ordering all connections with the ditches, whether opened or closed, to be cut off, and to enforce their orders. Such orders should include every one whose drainage reaches the ditches in any way, as all are alike contributors, though in varying amounts, to the nuisance created. The necessity of getting rid of the drainage still remains. If the owners of the property cannot manage to get the sewer constructed, each one must take care of his own sewage in such a manner as to cause no nuisance to any one. In the absence of better methods, it would be well to require tight cess-pools to be built for the reception of the sewage. These cess-pools must be cleaned at frequent intervals or they will be sources of nuisance, and constant care must be exercised by the board of health in supervising these cess-pools. Where more satisfactory and less troublesome methods, which are at the same time efficient are possible, they may be permitted. It is very unfortunate that the section is not in some corporation, or that there is no method of obtaining and maintaining public sewers in towns outside of village limits. Under the present laws inconvenient and somewhat inadequate methods must be used until the area is absorbed by a corporation, as must happen before many years. Too much stress cannot be laid upon the necessity of an early and thorough abatement of the present intolerable nuisance.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

REPORT

ON

Pond Nuisance in Guilderland and Rotterdam.

UNION COLLEGE—SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *May* 9, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I have the following report to make of my investigation of the drainage nuisance complained of lying in the towns of Rotterdam and Guilderland, Schenectady county.

Originally the marsh or swamp lay on both sides of a road on the town line, and the evidence is conflicting as to the direction in which what little drainage the piece had was effected. The facts are that no drainage could be effected in any direction without ditches cut through low parts in the ridge, shutting in the swamp. I am disposed to think that a ditch on Rotterdam side of the line drained the land on that side, except when it became obstructed, when part of the drainage would cross the road where opportunity offered. The same can probably be said of the ditch on the Guilderland side. The ditch on the Rotterdam side has now been filled up, and all the swamp must be drained by the Guilderland ditch. This ditch is not deep enough to do this duty, and, as a consequence, there is quite a swamp on that side of the line. The continuance of the swamp on the Rotterdam side has been stopped by some filling and scraping and manipulation of the road ditches and culverts. Consequently the drainage from this side undoubtedly affects the Guilderland side injuriously.

The swamp can be drained by a ditch on either side of the line through the sand ridge, either ditch reaching finally the same outlet ditch into Normanskill. This ditch can just as readily be

Report on Floods at Ithaca.

COMMUNICATION FROM CITY BOARD OF HEALTH.

To the State Board of Health:

The board of health of the city of Ithaca, respectfully represents to your honorable body, the state of affairs in this locality.

In consequence of obstructions placed in Cayuga outlet and Seneca river (under State authority directly and by others which have been allowed to remain) the surplus waters of the great chain of lakes are restricted in their natural flow and are flooding hundreds of acres within our city limits. This overflow is the cause of all, or nearly all, of the malarial diseases which afflict a portion of our citizens. While the general average of Ithaca's mortality is a favorable one, the average is only kept so by the exceptional great healthfulness of the other and higher portions of our city. Against these obstructions of a natural flow of surplus water, we have time and time again protested, but no relief has been granted us. To avert the great danger surrounding a portion of our people, we appeal to your board. We are powerless, as we have no control of those who have created these causes, and who continue them. Our case, it seems to us, falls so clearly within the province of your board to protect a large area from temporary floods, by the removal of placed obstructions, consequently avoiding danger of malarial diseases to hundreds of people, that we appeal, earnestly appeal to your honorable body to make speedy examination and take early action in the premises.

I, James B. Taylor, secretary of the board of health of the city of Ithaca, N. Y., do hereby certify that the foregoing petition was unanimously adopted at a meeting of said board June 10, 1890; and that at the same time the clerk of said board was directed to forward a copy of the same to the Board of Health of the State of New York.

Witness the seal of said city this 10th day of June, 1890.

[SEAL.] J. B. TAYLOR,
Secretary.

REPORT BY CHAS. C. BROWN, C. E.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *November* 19, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.— I have the following report to make of the investigation of the overflow of a portion of the city of Ithaca by Cayuga lake at certain times:

In company with yourself on June twenty-eighth I visited the city and observed the back-water from the lake standing upon the fair ground and extending over a considerable portion of the inhabited area of the city in the neighborhood of the inlet to Cayuga lake and along the banks of the lake. On July eighth and ninth, in company with the city engineer, city attorney and Mr. J. H. Selkreg, I made an examination of the outlet of the lake and of the canal obstructions in the vicinity, partly by steam launch and partly by row-boat, extending the latter trip as far as Weedsport. After this visit I obtained as much information as I was able to find concerning the work that has been done in past years in seeking a solution of the question above stated and others allied therewith. That information I have abstracted, and it accompanies this report. A clearer understanding will be reached if the subject is treated in the order of time, and I will make first a short statement of the work that has been done on the Seneca river below Cayuga lake, referring you to the appendix for a fuller statement.

It may be well to state at the beginning that there are several interests involved in the larger question. The first to receive attention was the condition of the Cayuga or Montezuma marshes, and the first work was towards a drainage of these lands. Later the Richmond aqueduct was built. This obstructed the flow of the river and considerable work was done with the idea of compensating for this obstruction as well as for draining the marshes. Later yet the drainage of the marshes seems to have been dropped and the compensation for obstruction remained the only object. This obstruction affected the plan for draining the marshes seriously, so far as the upper part of the marshes was concerned, and also affected the lands along Cayuga lake and

Seneca river above the marshes, including especially the low lands about the city of Ithaca, and to some extent the neighborhood of the village of Seneca Falls, and some other smaller places. It is claimed that the increased facility of flow of water in the river will (and does to some extent) affect the Oswego river below in times of flood, and it is also stated that if the level of the river and lake is lowered more than a certain amount, it will affect the landing places along Cayuga lake and thus interfere with navigation.

The first work towards a drainage of the Cayuga marshes was done in 1825, when a sum of money was appropriated to cut a canal around Jack's Reefs to reduce the level of the water in the marshes. This canal seems to have been an entire failure as it was not made large enough, and was not on a proper plan. The expense of the drainage of the marshes by this canal was to be borne by a tax upon the lands benefited, but as the benefit was inappreciable, the money advanced by the State has never been returned.

The next work was done in the years following 1852, upon a plan devised by George Geddes, engineer. This plan was well digested and devised, and accomplished all it was intended to accomplish, and even more so long as it was closely followed. But some later engineers departed from it in some essential details and considerable money has been spent unnecessarily on that account. This work was begun under the same proviso as the former, that the State should be reimbursed for the money advanced, by a tax on the lands benefited. I would refer to 1852, Senate Doc. No. 66, in the appendix, for a full statement of the plan. In brief it provided for the removal of sufficient rock from Jack's Reefs to give a large channel to carry off the water and lower the level above, and the dredging of channels through soft bars above to continue the low level thus obtained to the upper end of the marshes. The removal of Jack's Reefs lowered the water for some distance above by the four feet, which it was expected to do, but unfortunately Mr. Geddes then severed his connection with the work, and it was not carried on for some years under his plan, and the level at the reefs has not yet been brought up to the marshes.

There have been at various times obstructions in the channel of Seneca river, due to the piers of towing-path bridges, pile fenders for keeping boats from going down stream when crossing from one side of the river to the other at the crossing of the Erie canal before the aqueduct was built and at the crossing of the Seneca canal. The first act for the removal of such obstructions was passed in 1858. Similar acts have been passed at other times since, and one is needed at this time. This act of 1858 was passed in consequence of the agitation of the question by representatives of the village of Ithaca, as well as by others who were not receiving the full benefit of the work which had been done further down the river on account of the artificial obstructions near the upper end of the marshes. I would refer to the Appendix, 1858, Assembly Doc. No. 46, for a detailed statement of their case. The Richmond or Montezuma aqueduct and a portion of the long embankment to carry the canal across the marshes were partially completed at this time. An excessively high flood had come, and until it overtopped the partially completed embankment it set back into the lake and over the village. This embankment is stated to be one of the principal obstructions, and it evidently is, as it restricted the flood width of 15,000 feet by much more than one-half at that time and now restricts it to the opening under the arches of the aqueduct, the embankment being now completed and raised to such a height that no flood has ever since run over it. This is the first act for "Removing Obstructions from Seneca River." In 1858 the Canal Commissioners report a certain amount of work done in dredging out the bars on the scheme for draining the Cayuga marshes, but the work was not finished, was not carried on in the order prescribed in the original plan, nor were the appropriations sufficient to finish the work. The two lines of work, "draining the Cayuga marshes" and "removing obstructions from Seneca river," the former to be repaid by the lands benefited and the latter to be paid for by the State, ran side by side until 1863. There seems to have arisen an idea that the latter was intended to aid the former, and so make the State pay the expense of the former in some part without it becoming a lien on the land, and as the work on the plan for draining the marshes had been so done that it could not show its full effect until it was all done, the project for draining the marshes seems to have been

definitely dropped, and thereafter the work has been with the idea of compensating for the Montezuma aqueduct and embankment, much the greatest obstruction of an artificial nature to the channel of the river, and for which the State is responsible. The Canal Commissioners in 1863 presented a report showing that the work on the project for draining the marshes was necessary as a compensation for the construction of the aqueduct, as it would increase the declivity of the river, and therefore the volume of flow through a given cross section. It is recommended that this work be proceeded with to the extent necessary to secure this compensation, and the engineer, M. S. Kimball, presents estimates for the continuance of the work. He presents a smaller estimate, which he thinks will secure the compensation necessary, and a larger one which would secure the drainage of the marshes. At various times after this date sums were appropriated to continue this work, but none were available on account of defects in the acts until 1874–5, when some work was done in dredging out bars. The work was not fully completed, for in 1879 the State Engineer, Horatio Seymour, Jr., was asked to make a report concerning the obstructions in Seneca river, and he states that the work at bars Nos. 2, 10 and 11 should be completed, and the foundation of the New York Central railroad bridge (direct line) be lowered so as not to obstruct the flow of the stream. He also says that in order to have this work affect the level of Cayuga lake, the bottom should be taken out above the aqueduct as far as the lake to the same depth as below. He estimates the cost of lowering the water at Montezuma two feet, at $17,000, of lowering the lake one foot at $30,000 additional, and of lowering the lake two feet at $100,000, and advises thorough survey before work is proceeded with. (See appendix for full statement.) In 1884 an act was passed requiring the water level in the river to be observed three times a year at designated places. The object was doubtless to obtain definite knowledge of the effect of the work done, and to show what the obstructions of the flow now are. The wording of the act was such, however, that this information could not be obtained if it was strictly followed. As the engineer in charge of the observations has followed the strict letter of the law so far as it was not actually impossible, the observations are of but little use for the purpose for which they were probably intended.



Canandaigua or Clyde river. It is certain that in seasons like the last two or three the water of the spring floods is retained until the additions of a wet summer arrive, and the growth of grass begins in the water of the river to still further reduce the capacity of the channel. Therefore the water remains during months of time on the flats at the head of the lake, including the fair grounds and several blocks of the city on which dwellings and shops have been built, rendering these areas unhealthful, and being of much damage to them in their uses for purposes of business for which they are ordinarily suitable.

The maximum observed discharge at the aqueduct has been estimated at about 15,000 cubic feet a second, but it is quite possible for this to be exceeded at any time, as the water-shed of the river has an extent of 2,750 square miles, including several lakes, and a period of extreme high water on several or all of the branches of the river at the same time is of rare occurrence, and may not yet have been observed. The Seneca river flows through the lower end of Cayuga lake, entering north of the New York Central railroad bridge (Auburn or old road). On account of the obstructions in the channel of the river below, which prevent a free discharge, the waters of the upper part of the river, during periods of high water there, flow out into the lake, raising its level at the lower end, which still further detains the waters from the upper end. This is shown by observation of the flow of the water in the lower end of the lake at such times. I am told that the village of Seneca Falls has prevented the carrying out of a new plan for the railroad bridge across the lake because that plan contemplated the closing up of a culvert near the west end of the bridge, near the point of entry of the river into the lake, and it was feared that the increased difficulty that the water would have in getting into the upper portion of the lake (flowing along the embankment to the bridge and thence southward into the lake) would cause it to back up the river and affect the neighborhood of that village.

An inspection of the obstructions begins with this bridge. It is probable that the bridge has no great effect upon the level of the water in the lake. If it holds back the waters of the upper part of the lake in any degree, it also holds the waters of upper Seneca river, and makes it more difficult for them to flow into the upper portion of the lake.

The next obstruction to the flow of the water is one which it requires but a simple inspection to determine. It is the crossing of the Seneca river by the Seneca branch of the canal. The width of the river has been greatly reduced by the canal embankments. The crossing consists of a tow-path bridge having a length of 261 feet, and a clear opening for the passage of water of a width of less than 230 feet. The average depth of water at the time of our visit was about ten feet, making the area of cross-section less than 2,500 square feet. Just above this bridge a structure is built to prevent the strong current through this contracted water-way from carrying boats down stream. This structure consists of about 100 piles driven in two or more rows, in such manner as to leave a clear opening between piles for the flow of water of about 200 feet, the length of any one opening not being more than five feet. One foot above the water surface on that day there was a horizontal waling piece running from end to end, twelve inches wide, and one and one-half feet below the water there was another ten inches wide. These still further restrict the area. The average depth here as determined from about fifteen measurements is 11.3 feet, making the area of water-way about 2,260 square feet, or less if allowance is made for the wales. This area is still further restricted by a canal boat which is sunk above the bridge and below the piles, across the middle span of the bridge. This boat is 58.5 feet long and about eight feet deep. The fall of the water in going over or through this dam, even when unrestricted by ice or eel grass, is apparent and needs no measurement. It is easy to remove the necessity for the piles and waling pieces by substituting a cable and trolleys further up stream, to which boats can be attached in going across and thus held from going down stream. The present rapid current would then be reduced to some extent. But the primary necessity of some such arrangement is evidence that the restriction of the width of water-way to the dimensions of the tow-path bridge, given above, is greater than the amount of water that passes here, even at ordinary stages, can allow and still have the natural free discharge at this point. There is no doubt that the protection, and after that the bridge, is an obstruction for which the State is responsible, and which it should remove or alter so that the natural flow can be secured. The velocity of the current near the west end was estimated as nearly two feet a second.

At the free bridge nearly a mile further down the river, the current was about one and one-half feet a second. There may be a little obstruction at this point but it is not very noticeable. The shallow parts of the channel above the aqueduct doubtless delay the passage of water from the lack of cross section, and they also give an opportunity for the growth of grass to choke up the entire width of channel to a very appreciable degree during the later summer and fall months, or from the time the grass begins to grow until the frosts of winter kill it.

The difference of level at the location of the old channel of Clyde river above and below the canal was 0.462 feet. This difference for three days in each year since 1884 is given in a table from the State Engineer's Report for 1890 in the Appendix. It is caused by the necessity the water has of running east, nearly at right angles with its former course to the aqueduct, thence turning a right angle to get through the aqueduct and then at right angles again, flowing to the west to reach the old channel on the north side of the canal bank. This river under these conditions doubtless has a great effect in certain stages of water in retaining the waters of Seneca river and so extending the duration of the floods in Cayuga lake.

The average depth of the water on the south side of the aqueduct on the day of our visit was 8.8 feet, and on the north side was 8.4 feet. The difference is probably due to the fact that some of the soundings on the lower (north) side were taken a short distance below the trunk, and the bed under the trunk is said to have been dredged out deeper than the channel on either side. Opposite one arch, however, the sounding at the trunk was 8.1 feet and a little below it was nine feet. There being thirty-one arches, each of twenty-two feet span, the clear length of opening is 682 feet, and the area of cross section is about 5,900 square feet. The bottom of the trunk of the aqueduct was 1.85 feet above the water surface, so that the maximum possible cross section for the flow of water is about 7,200 square feet. The aqueduct was designed to pass 10,000 cubic feet a second, the estimated flow of the Seneca and Clyde rivers at flood times. The velocity necessary to pass this amount is about 1.4 feet a second. This velocity was observed at several places along the river. For quantities of water up to 10,000 cubic feet a second, the aqueduct in itself is an obstruction only so far as the restriction of the flow by the piers causes an

increase of the maximum velocity above this mean velocity of 1.4 feet a second. Observations made since the aqueduct was constructed have shown a volume of 15,000 cubic feet a second passing the aqueduct. It is evident that the aqueduct is an obstruction to such volumes, the amount of which can be roughly estimated by the difference of height of water on the upper and lower sides of the aqueduct necessary to give the head required to force the water through. The evidence varies as to the amount of difference of height of water from an inch or so to two feet or more. I am not aware that any careful measurements of the same have been taken. The obstruction by the embankment of the canal has already been estimated. The three obstructions, viz., the embankment, the aqueduct and the change of the flow of the Clyde river are concentrated at this one point. The work in dredging a channel below the aqueduct has been proceeded with on the theory that lowering the level of water below the aqueduct would supply the required head to force the water through the aqueduct openings without raising the level of water above the aqueduct so much as now. The theory is correct and can be practically carried out if the lowering of the level below the aqueduct can be carried far enough. This is, I believe, possible to a fair degree if the work laid out below the aqueduct as summarized in the extract from the report of Horatio Seymour, Jr., above, is carried out.

There are certain bridges and bars, however, not mentioned in that report which should receive attention. They are apparently obstructions, and on a careful examination their importance as such can be determined, and they can be treated accordingly. The first obstruction below the aqueduct (mentioned in the report) is the New York Central railroad bridge (direct line) whose foundation is three or four feet above the bottom of the channel as dredged above and below. This is an obstruction of more consequence at low stages than in times of flood, but it certainly is of considerable consequence at all times. The depth of the foundation, at least where the dredged channel passes the bridge, should be increased to give the full depth to the channel, and the number of spans across the dredged channel should be reduced to one long enough to allow for further widening of the channel. The foundation now acts as a dam and takes away a large part of the usefulness of the work done by the State on the channel. The highway

bridges to Howland's island are also obstructions. They catch drift-wood and fill up the channel so that a perceptible dam is formed and considerable loss of declivity results. The greatest natural obstruction observed by us was that at Mosquito Point. The observed velocity of flow here was between four and five feet a second and the cross-section taken at three different places was about 2,200 square feet. The great increase in velocity here indicates clearly a considerable obstruction which is only removable by work upon the channel of the river. The bridge here is also some obstruction by reason of the short span. All the bridges for highways across the river have pile piers with twenty-feet spans, and catch considerable drift both above and below the surface of the water, which is not always promptly removed. It certainly must be to preserve the good effect of the work on the channel, or else the bridges must be reconstructed to be less of the nature of obstructions. One or two of the bridges are in very dilapidated condition, and are liable to be carried away at any time. So far as we were able to examine the work under water, which has been done on the channel, we found it fairly permanent, with the possible exception of Mosquito Point bar, which was probably never taken out to the proper depth. The permanency of all the work would be better insured by its completion, as the current would be more uniform, and the tendency to deposit would be reduced.

Mention should be made of the fact that the canals furnish to the river a regular flow estimated at 4,000 cubic feet a minute, and a large additional leakage and overflow at the aqueduct. The total flow from the canal into the river has been estimated at over 4,000,000 cubic feet a day, or fifty cubic feet a second, which is largely augmented for short times whenever the canal is emptied. This water is brought from outside the Seneca river water-shed.

In conclusion, I wish to repeat that it seemed to us evident that there were numerous artificial obstructions to the flow of water in the river which react unfavorably on the city of Ithaca and on other places similarly situated, and for which those places are not to blame, and from which they should have relief; and that all the work that can be done to compensate for the aqueduct and its embankment has not yet been done, and that it should be done in order to restore as nearly as possible the conditions that existed before the embankment was built. These things being done, it is

to be expected that the result upon the city of Ithaca will be favorable, and that it will be returned to its original condition as regards floods, and especially as regards their early subsidence.

Plate I gives Geddes' map of the portion of the Seneca river under consideration. Plate II is substantially a copy of the map in the office of the State Engineer of the river from Cayuga lake to Cross lake. Plate III gives the profile of plate II with the river surface on each of the dates given in the table in the State Engineer's report for 1890, given in the appendix.

Respectfully submitted.

CHAS. C. BROWN,
Civil Engineer.

Documentary History of Seneca River Improvements.

1824 or 1825. Law passed appropriating money for draining Cayuga marshes. See 1852 for description of work done. Also 1853.

1848. Jan. 12. Assembly Doc. 16, p. 75:

One of the arguments for the aqueduct is: "By the adoption of the upper level * * * * there would be less impediment in reclaiming the marshes, a work that will probably at some future time be done by reducing the surface of the river."

1852. Feb. 12. Senate Doc. 66. R. of Com'rs on dr. Cay. M.:

"The undersigned commissioners appointed in pursuance of an act in relation to draining the Cayuga marshes, passed July 10, 1851, report that soon after their appointment they held a meeting of the commissioners at Syracuse, and prepared directions to the State Engineer and Surveyor for such surveys and levels as they deemed necessary to an understanding of the subject upon which the law required them to report. The unhealthiness of the district to be examined, and some other causes unforeseen at the commencement, prevented the completion of the labors of the engineer as soon as was desired. It appears that the report of the Hon. George Geddes, engineer in charge of surveys and levels, was filed in the office of the late State Engineer and Surveyor on the thirty-first day of December last, and upon our application a copy was communicated to us by the present State Engineer and Surveyor on the eighth day of January last, which we submit herewith, with the maps and profiles accompanying the same. We earnestly recommend this report of Mr. Geddes to the Legislature. It presents in a clear and practical manner the causes which have combined to create the vast marshes bordering on the Seneca river and suggests the means by which they may be reclaimed. As soon as the work under charge of the principal engineer had so far progressed as to prepare him to afford us useful information, we

accompanied him in an exploration by water of the Seneca river, and the Cayuga marshes in which we made the only examination that can be made except at times when the river and marshes are so frozen over as to allow of traveling on them on the ice. This personal inspection has been useful to us by aiding us to understand the scientific report of the engineer, and to appreciate the great importance of the improvement contemplated.

"The commissioners met at the commencement of the present session of the Legislature to prepare their report intending to present the same within the time contemplated by the act of July 10, 1851, but they were unable to find any records of the proceedings of the commissioners appointed under the act of 1825, and they deemed a knowledge of these of sufficient importance to delay the report until further searches could be made. Those searches have been prosecuted and have within a few days been partially successful. The delay of this highly important and necessary work for so long a time after the settlement of western New York, its suspension after a commencement, and its neglect until the last session of the Legislature, must be ascribed to the engrossment of the energies and resources of the State for the greater portion of the time when the financial condition of the country would allow, in the prosecution of other great works of improvement. The fact that the lands to be benefited belonged to a great number of individuals and that the State had little or no interest in them by ownership, has probably been another cause of the neglect of the subject.

"In the year 1825, under an act of the Legislature of that year, a survey map and assessment of all the lands embraced in the Cayuga marshes and swamps on the Seneca river were ordered to be made. This was accomplished; but the map cannot be found in the Comptroller's office, where it was required to be filed; but the field notes of the surveys and the assessment-roll, a copy of which accompanies this report, made by the commissioners appointed for that purpose, shows an aggregate of near 30,000 acres of land appraised at an average price of less than eighty-four cents an acre. We are informed that this survey does not include large bodies of land which will be greatly benefited by the reduction of the water of the river. We have no means of testing the accuracy of this information, but are induced to believe it is true to an extent worthy of consideration in providing for a

future equitable assessment to defray the expenses of the improvement. This immense body of land is in the heart of the most fertile, beautiful and prosperous part of the State, and is capable of being made itself of the most productive and valuable quality instead of being, as it now is, not only utterly unprofitable and totally useless to its owners, but an unsightly blemish upon the fairest portion of our State, a colossal nuisance, and a source of continued and wide-spreading pestilence to the surrounding country.

"The attempt to redeem these lands, made under the law of 1825, proved a failure. Instead of lowering the bed of the river on Jack's Reefs, an attempt was made to reduce the streams by a cut across a short but elevated neck of land, requiring an immense expenditure in excavation above the natural surface of the river. Had the money expended upon this cross-cut in making a miniature canal through deep-rock excavation been expended in removing the reef itself and the bar at Mosquito point, the Cayuga marshes and swamps would long since have been what it is believed they are destined to be, and proprietors would have realized wealth from their ownership after reimbursing the State for its expenditures for their improvement. The elevated and rocky bottom at Jack's Reefs and the gravelly bar at Mosquito point are the principal barriers that hold up the waters of Seneca river and spread them over these lands. Not only the best but the most feasible plan of draining and reclaiming these lands is to remove these barriers, first, that at Jack's Reefs and next that at Mosquito point, to such an extent as to transfer the falls or rapids at those points successively to the next shoal water above them. These are not only the first most material and important, but perfectly indispensable operations, and any work done previous to the removal of these two obstructions would be useless. The estimated cost of the necessary excavations at these two points, Jack's Reefs and Mosquito point, according to the report of the engineer, is $92,000. This once accomplished, it is believed that the remaining obstructions, being for the most part of very soft materials, under the force of the current created upon them by the removal of the two first, aided by the ordinary freshets of the stream, would soon be washed into the deep pools which are found below all these bars. At all events it would require but little assistance from a dredg-

ing machine to stir up the soft bottom in aid of a current to remove them effectually. The estimated cost according to the report of the engineer, of the whole work necessary to reclaim these marshes, is within the sum of $150,000, which the undersigned believe is a greater sum than will be necessary to accomplish it.

"The question arises, from what sources and in what manner shall the necessary funds be obtained? By the act of 1825 it was provided that an assessment roll, to which we have heretofore referred, of all the lands to be benefited by the improvement should be made out at their then value. The money for the work was to be advanced by the State, and after its completion it was provided that a new assessment of the lands should be made at their improved value, and a tax levied upon them sufficient to reimburse the State the money advanced. The same course may be adopted now. The average price of lands bordering upon these marshes is not less than thirty dollars to forty dollars per acre. The marshes when reclaimed will be far more valuable than the adjacent lands, and amply sufficient to pay the necessary advance of the State and leave a large profit to the owners, resulting from the operation. In view of the facts herein presented, the undersigned respectfully recommend the passage of a law ordering the drainage of the marshes on the Cayuga lake and Seneca river, providing for the reimbursement of the money to be expended thereon by assessments on the lands benefited by the improvement.

"W. H. ADAMS,
"H'Y FITZHUGH,
"J. B. WILLIAMS,
"*Commissioners.*"

REPORT OF CIVIL ENGINEER.

HON. HEZEKIAH C. SEYMOUR, *State Engineer and Surveyor:*

SIR.—I have made a survey of the Seneca river from Cayuga lake to Baldwinsville, with a view of answering the interrogations proposed by the commissioners appointed by the Governor to report a plan for draining the Cayuga marshes, and also with a view to the lowering of Cayuga lake.

I commenced my examinations on the fourteenth day of August, last. Benches were established at various places on the shore of

the river early in September, with a view to observe the rise and fall of the water, and a party under the immediate direction of Levi Williams, C. E., commenced leveling on the first day of October, since which time we have been busily engaged in field and office work. The weather has been unfavorable and it has been, therefore, necessary to make great exertions to accomplish what we have. Further surveys are necessary to determine the quantity of marsh and swamp injured by the water of the river. I cannot learn that this has ever been accurately done, but I have the quantity stated at from 30,000 to 50,000 acres. In making my report I have for convenience followed the order of the interrogatories put by the commissioners.

First. The highest water of Cayuga lake for twenty years past was 3.60 feet above the lowest water of this year, the water being lower this year than it has been for many years previous. In 1831, the late James Geddes, C. E., made some examinations of the outlet of Cayuga lake, by order of the canal commissioners. From his report I made the following extract: "When the deep and narrow cut was made across the bend of the Seneca river below Cross lake it was supposed that the operation would be to drain the water from the Cayuga marshes very low by midsummer, but that it would not be taken off sufficiently early in the season. Results have been quite otherwise. The spring floods recede until June or July. When the water commences rising and continues on the rise until the first of October. Later or earlier according to the setting in of the fall frosts which cut down the luxurious growth of herbage that has risen in the bed of the river during the hot season and obstructed the passing off of the water. The water in the outlet and consequently in Cayuga lake, was higher in September and October than in April, raised and held up by the herbage growing in the bed of the river. The vegetables springing up here in warm weather are named by the fishermen eelgrass, and classed by the botanists among the very numerous varieties of confervæ. This weed grows in shallow places on muddy bottoms."

The outlet of the Seneca and of the Crooked lakes discharges into the lower end of Cayuga lake, and sometimes freshets from these lakes are in the summer season discharged into the Cayuga which, being held up by the grass that obstructs the outlet, causes very great rises in the water. The eelgrass fills the river

in shallow places through the whole extent of the marshes, and causes the water to remain on them long after it would otherwise have passed off. The outlet of Cayuga lake is shallow and narrow at the place where the lake ends and the river begins, having but 1,815 feet of water way; and as late as the twenty-ninth day of November last more than a sixth part of this shallow channel was choked with weeds.

Second. The fall of the surface of the water from a point above

ERRATA.

Page 441, second line from bottom, for ".967" read "11.967."

Page 485, tenth line from bottom, for "20 x 10" read "60 x 13."

Same page, eleventh line from bottom, for "40 x 12" read "60 x 12."

Page 511, twelfth line from bottom, for "($9,117,410.50)" read "($117,410.50)."

Page 527, fifteenth line from top, after the word "of," insert "rainfall;."

Head of reef at Howland's bridge	74,100	4.338
Foot of reef at Howland's bridge	75,700	4.416
Head of Mosquito Point reef	82,200	4.494
Foot of Mosquito Point reef	86,400	4.989
Weedsport bridge	111,000	5.448
Skaneateles creek	126,000	5.747
West side of Cross lake	139,800	5.843
Head of Jack's reef, canal	159,600	5.890
Foot of Drake's mill-race	167,400	5.989
Jack's Reef bridge	170,100	6.816
Foot of reef	178,200	11.139
Level of Baldwinsville pond	180,600	11.489
Water at top of dam	222,450	.967
Top of dam as fixed by monument	.....	12.642

The results differ at some points from what had been reported as the fall by persons who had previously made examination of this river, but there is nothing that cannot be accounted for and reconciled when the laws that regulate this stream are understood. The fall at the various points mentioned will vary with every change in the quantity of water running in the river, and as the weeds obstruct the flow of the water. Our levels commenced on the first day of October, the weeds having dammed up the water in the lake and in the marshes. The river was low because the supply was cut off. When the weeds were killed by the frosts the lake fell so that on the sixth day of November it was 1.09 feet lower than when we commenced. In the spring freshets the water rises at Mosquito point as high as 5.14 feet above the water when we took its height. If Cayuga lake should be at the same time at its highest mark, there would be but 2.23 feet fall from the lake to Mosquito point.

Third. The channel of Seneca river varies in width from 300 to 3,100 feet. Its width at the point where the Cayuga lake ends, was, on the twenty-ninth day of November, 580 feet, and of an average depth at that place of 3.13 feet. At the place where the Jack's Reef bridge crosses the river, it is but 300 feet wide, the shores being from 8 to 12 feet higher than the surface of the water, consisting of slate and gravel. At Weedsport bridge the river is but 300 feet wide, the shores being low. At Mosquito point the river was, on the eleventh of November, but 400 feet wide, and of an average depth of 3 feet, the shores being from 4 to 12 feet above the water, and the bottom and sides made of hard gravel. Mosquito point was but recently the lower end of Cayuga lake, and now, as often as the water is very high, it becomes so. At this place the hard land approaches the river on both sides, and the evidences that the river has worn its way down into the gravel some feet, are too strong to be resisted. There are no places in the river so narrow as to make it necessary to widen the channel for the purpose of draining the marshes.

Fourth. As to the depth of the channel: Soundings have been taken in the river with great care at known distances apart from the east end of the water way through the Rochester and Syracuse railroad embankment across the lower end of the lake to the deep water below Jack's reefs, so as to give the requisite data to calculate the amount and character of the earth that it might be

necessary to move to drain the marshes. Below Jack's reef the soundings have been taken opposite stakes on shore, but not from a line stretched on the water. The profile that is submitted with this report will exhibit the top and bottom of the water as it was in October, and it is not necessary here to give the sounding. The first shallow place is at the point where the lake ends, which is distant in a direct line from the place of beginning 1½ mile and 500 feet. The water was here but 4 feet deep in the deepest place, the surface falling ⅓ of a foot. The bottom is made of sand and mud and, as has been remarked, the channel is much choked by weeds. This shoal is about 1,500 feet long. The next shallow is 2 miles from the place of beginning, and the water was but 3.60 feet deep. The bottom is mud and the shoal is but about 800 feet long. The fall in the surface of the water at this place is too little to be noticed. The third shoal is known as the Free Bridge reef, being 3 miles from the place of beginning, and is about 3,000 feet long. The fall of the surface of the water here is about 0.86 foot. The bottom is hard, consisting of coarse gravel. The water averages about 4 feet deep in the channel. At the lower end of this shoal there is an island and the west channel, though only about 100 feet wide, is generally 8 to 9 feet deep, except where it joins the east and main channel where the depth is only 4 feet. At the head of Kipp's island, which is nearly 5 miles from the place of beginning, there is a bar on which the water was only 3½ feet deep. This shoal is about 1,700 feet long and is made of sand and mud.

Kipp's island is 3½ miles long and is crossed by the Erie canal at Montezuma, which is about 6¾ miles from the place of beginning. The west branch of the river is deep, averaging about 16 feet through. In one place it is for about 100 feet in length only 7 feet deep. This bar is below the canal and is said to have been formed by the sinking of a raft at that place many years ago. A little below the upper end of Kipp's island a stream that is marked on the large maps of the State as Clyde river joins the Seneca. This river is formed by the outlet of Canandaigua lake and Mud creek, and is a very considerable stream, much more affected by freshets than is the Seneca river above its mouth. This river very often rises so high that when it meets the west branch of the Seneca, it divides its waters, and sending part of them south, fills up the Cayuga lake as well as the marshes. The

west channel of the Seneca at Kipp's island is generally called by the inhabitants the Canandaigua river. In constructing the enlarged Erie canal it has been decided to fill up this west branch where the canal crosses it and cut a canal across the island to the east branch for the discharge of the Clyde river into the canal to cross the marshes high enough to pass the river under it. By this plan the whole water must go down the east channel from a point above the canal unless it is sent again across the island, which can be easily done by widening and deepening the old canal.

Nine miles from the point of beginning commences Bluff point shoal, which, including Campbell's island shoal, is about 3½ miles long, the water in many places being not more than 3 feet in depth. Above Bluff point the river and bay are 3,100 feet wide across which the direct road from Rochester to Syracuse is now in course of construction. The bottom here is soft mud very easily moved by the dredging machine that has been used for excavating the foundation for the railroad bridge. The fall in the shoal (including what is called Campbell's island reef) is 1 foot 9 inches. Most of this long shoal was covered with eel grass, thickly, so that, but for the great width of the river the flow of the water would have been nearly stopped. About 13⅝ miles from the place of beginning is Howland's island bridge at which there is a shoal about 300 feet long, the shallowest water being only about 5½ feet deep, but 20 feet deep above and below. Fifteen miles from the place of beginning is Duval point. Just above which there is a shoal about 1,000 feet long on which the water is 8.60 feet deep. At Duval point is a shoal about 300 feet long on which the water is 9 feet deep. Mosquito point is from the place of beginning 15¾ miles, where the water was but 3½ feet deep as above stated. Here is what was but recently the lower end of the lake. The channel is not only shallow but narrow, being only 400 feet wide. Nothing can be effectually done towards reclaiming the marshes without cutting away this barrier so as to give a free outlet to the water. The length of this reef is 2,000 feet, with deep water above and below. The fall in the surface was 0.49 feet. About 1 mile lower down stream is a bar on which there is a bridge; the length of the bar is about 300 feet, and the depth of water is 7½ feet. About 19 miles from the place of beginning is Hickory island reef where the water in one place was only 3 feet in depth, the bar being about 800 feet long and of soft mud. The fall at this

reef is 0.46 feet. At Weedsport bridge there is a short bar on which the water was 5½ feet deep. The mud is very soft as was shown by the action of a dredging machine at work there this season. The fall is about 1½ inches. About a mile above Bonta bridge, and 21¾ miles from the place of beginning is a small bar on which water was 7 feet deep. Bonta bridge reef has 6 feet water at its shallowest place, and is about 500 feet long. There is about 0.30 feet fall at this place; the bottom soft. Just below the mouth of Skaneateles creek there is a short bar on which the water was 7 feet deep. This was the last bar found above Jack's reefs where the water was less than 10 feet depth. In one place near the float-bridge the water was 43 feet deep.

The State, many years ago, caused a canal to be cut across a bend in the river below Cross lake, connecting the pond made by the Baldwinsville dam with the waters of the river when they were on a level with Cross lake, and where the water was 20 feet deep, and not less than that in the shallowest place between that point and the lake. In the part of the river thus cut off is Jack's reefs. The water falls in this canal 5¼ feet. This canal is 4,200 feet long, and is at the surface of the water of an average width of about 40 feet, and is of an average depth of about 23 feet, and was cut through a soft rock known as green shale. The water varies in depth from 8.80 to 2.5 feet. About midway of the length of the canal, the bottom is 0.2 feet higher than the surface of the water in the pond below the reefs. It is apparent that though the water runs very rapidly through the lower half of the canal that but a very small part of the water of this great river can go through it. It appears strange that the planners of this canal did not dig it deeper and make its bottom more level. For 500 feet of the upper end the water is more than 8 feet deep. In high water large quantities will of course go through, but in low water very little. The shale that was taken from the cut was deposited by cranes in large mounds on both sides, and to widen it would require the removal of this earth on one side, that is to say, one-half the contents of the canal must be moved out of the way before the natural surface of the earth would be reached. This canal can be and should be deepened, but the cost of widening it would be too great to justify its being done. It should be deepened so that the bottom would be 6 feet below the top of the water in the pond below the reefs, and rising only 1 foot in the

length of the canal. Calculations have been made from careful measurement to determine the quantity of material that it would be necessary to move to so deepen this canal, leaving the bottom 20 feet wide, and it has been found to be 15,644 cubic yards, which I estimate to be worth 60 cents a yard, including the cost of dams across the ends of the canal and pumping. This would amount to $9,386. Such an improvement of the canal would, the river remaining at its present height, enable more water to pass than has at any time run in the river since the month of August last. Having thus deepened the artificial channel, a dam can be made across the bed of the river above the reefs and below the upper end of the canal, and thus the whole bed of the river may be freed from water, except the small part of it that will require to be excavated below the level of the lower pond. To free this part of the river bed from water, a dam must be made across it just above the lower end of the canal, and the water pumped out. I propose then to make a cut in the bed of the river 100 feet wide on the bottom, and beginning 6 feet below the surface of the lower pond, carrying it up to the deep water above the reefs, with 1 foot rise; the dams being then taken away the water will run through both these cuts upon the bottom that will be at their ends on like levels. The reduction that would then take place in the surface of the water above the reefs, would of course, depend upon the quantity of water that may run in the river any given time.

Until after the frosts had in part destroyed the weeds in the river, it was not practicable to gauge the stream with accuracy. On the twelfth of November it was found at Mosquito point, that there were 1,397 cubic feet running a second. The water was then lower than it had been for many years; and calculations were made of the quantity that flowed in the middle of August, as indicated by the marks then made for the surface, and it was found to be 1,947 feet, without deducting anything for the weeds, that at that time somewhat obstructed the flow of water. My calculations are based on carrying 2,000 feet a second, 4 feet below the surface, as it was on the first of October last. The earth taken from the bed of the river should be carried beyond the present channel so as to be out of the way of the freshets that might raise the water up to the present bottom. To make this cut in the bed of the river, it will be necessary to move 54,743 cubic yards of

mud and gravel. This I estimate to be worth 15 cents a yard. Under this earth lies the green shale, of which there must be taken out 165,106 cubic yards, which I estimate at 30 cents a yard. The cost of coffer dams and pumping may be put at $5,000, and the total cost of lowering Jack's reefs, as I propose, will be $72,129. An estimate has been made for widening the present ditch so as to carry the same amount of water as I have above proposed, and it is found that it will be necessary to remove 381,888 cubic yards, which in view of the depth of cutting should be put at 40 cents, and would cost $152,755. In one case it is necessary to remove earth to the average depth of 18 feet above top water-mark; while in the other the excavation would be commenced 3 feet below the surface of the water; and the quarter length of the cut in the river 10,800 feet, would not equal in cost one-half of the shorter but deep cut.

This plan, except in freshets, would reduce the surface of Cross lake 4 feet, and no more excavation would be required below the bar at the Skaneateles to cut a channel at Skaneateles bar 200 feet wide, and so deep that there will be 4 feet of water in it after the river is reduced 4 feet, or, in other words, 8 feet deep, as the water was then measured would require 740 cubic yards, which, at 10 cents, would amount to $74. At Bonta's bridge a like cut would be required, 2,222 yards, at 10 cents, would amount to $222. At the bar above the bridge a like cut would be required, 3,700 yards, which, at same price, would amount to $370. The bar at Weedsport bridge for a like cut would require 2,220, at 10 cents would amount to $222. At Hickory island a like cut would require 38,516 yards, at 10 cents would amount to $3,851. These shoals are of such material that it is quite probable that by the aid of the current that would be given by having 4 feet additional fall, a large proportion would go away with the water if merely loosened up by a dredging machine. The mud taken up at Weedsport bridge this fall by the dredging machine was so soft and saturated with water that it appeared hardly possible for it to remain under the action of such a current as would be felt there when the water below the bar was reduced 4 feet. Nothing would be required to be done at the bridge about a mile below Mosquito point. The bar at Mosquito point is, as has been said, hard gravel, but it is believed that it can be moved by an under-water excavator, some work having been done there by such a machine

many years ago. I propose to cut this bar down 6½ feet at its highest point, and thereby make a bottom 10 feet below the surface of the water, as it was when measured in October. This cut to be 200 feet wide and 2,000 feet long on the bottom requiring 66,889 yards to be taken out, which I estimate at 30 cents a yard, amounting to the sum of $20,066. Thus I estimate the total cost of reducing the water 4 feet at Mosquito point at $96,933. The reason why I propose to cut so deep at Mosquito point is that the natural bed of the river is so narrow that the high water is here retained more than at any other point on the river, and unless free vent is given to it, reclaiming the marshes will be out of the question. If the plan I propose should be adopted the freshets that now cover the marshes would pass off rapidly, and would never rise so high by 2 or 3 feet as heretofore. At Howland's island bridge it would be necessary to excavate 3,500 yards, which, being more compact than the mud bar, I put at 12 cents a yard, which amounts to $420. Campbell's island and Bluff point shoals are together about 3½ miles long. The proper way of moving this mud is to reduce the water below as proposed, and by the aid of a steam dredging machine let the water carry it into the deep holes that abound in the river. It is very difficult to say what it will cost to move this mud by the yard, having the assistance of the current; but without its aid it would probably cost 15 cents, as indicated by the work done in excavating for the railroad bridge. But experienced men, with whom I have advised on this point, think as I do, that adding 4-feet fall to the 1¾ now in the shoal that little more will be required than to keep a dredging machine working out the channel to float away the soft mud. But to be on the safe side, I will call it 10 cents.

(Note from Rees' Cyclopedia, article Water. It appears from observation that a velocity of 3 inches a second at the bottom will just begin to work on fine clay fit for pottery, and however firm and compact it may be, it will tear it up. Yet no beds are more stable than clay when the velocities do not exceed this, for the water soon takes away the impalpable particles of the superficial clay, leaving the particles of sand sticking by their lower half in the rest of the clay which they now protect, making a very permanent bottom if the stream does not bring down gravel or coarse sand which will rub off this very thin crust and allow another layer to be worn off. A velocity of 6 inches a second will lift

fine sand; 8 inches will lift sand as coarse as linseed; 12 inches will sweep along fine gravel; 24 inches will roll along pebbles an inch in diameter; and it requires 3 feet a second at the bottom to sweep along shivered angular stones of the size of an egg.)

A cut of 210 feet average width would require 408,527 cubic yards, which at ten cents would cost $40,852, which makes $138,206 to the lower end of Kipp's island; and in this calculation, for the purpose of securing sufficient velocity of the water to prevent the cut filling up with mud I propose to lose one foot fall above Mosquito point and reduce the water at Kipp's island only 3 feet.

If no account is made for increased expense in deepening the channel in consequence of the enlargement of the Erie canal, no work will be required on the west side of Kipp's island unless it may be necessary at the short bar heretofore mentioned as having been caused by the sinking of a raft, but it is not probable that anything more would be required at that place than to allow the increased current to act. The Canandaigua would in this way be lowered 3 feet and all the wet lands on its borders would be made dry for many miles. At the upper end of Kipp's island there is a bar that should be cut down 3 feet and 200 feet wide. This would require the moving of 64,814 yards, which at ten cents would amount to $6,481. Next above is the Free bridge reef which, as has been said, is made of gravel. If this reef and two slight bars above were cut down and also as has been proposed at all points below, it would have the effect of lowering Cayuga lake from 2 to 3 feet. If the hard material of Free bridge reef were taken away it is probable that the two bars above would be carried away by the water. It is my opinion that nothing should be done at this place until after the deepening below has been done and its effect upon Cayuga lake determined. It is probable that without moving anything from the bed of the river at Free bridge the lake would fall 1 foot. The freshets that have heretofore affected it would run off down the river and the surface of the lake would be of a much more uniform height. I have stated my plan in detail, and the whole cost I estimate at $144,687. If this plan should be adopted the great object of making these pestilential marshes productive and healthy would be accomplished. Any plan that proposes less than this appears to me to be useless.

Fifth. I have been requested by the commissioners through you to state as far as practicable to do so by the best means in my power without waiting for the rise of the waters, the difference in the amount of water passing the Seneca river at Mosquito point and at Baldwinsville in high and low water and the amount of water commonly running to waste during the autumn months, the winter months and the spring months. I have already stated that in November there were 1,397 cubic feet passing Mosquito point a second, and that my calculations suppose 2,000 cubic feet a second at the usual summer flow at Jack's reef after the freshets of spring have subsided. From the high-water marks at Mosquito point and Jack's reefs, calculations were made which gave 9,156 cubic feet a second, as the greatest quantity of water that passed the place first mentioned in freshets. Calculations were made based upon the number of square miles that were drained by this river and from the rain gauges kept at the academies on and near this territory of the quantity of water that falls in a year, and having made such allowance as appeared proper for the evaporation, the average flow per second for the whole year at Jack's reefs is 2,651 cubic feet a second.

None of this water can be said to run to waste, except the spring freshets. The character of the country drained by this river is such that there can be no very high or very low water, and the flow is more uniform than in any river, with the exception of the St. Lawrence, with which I am acquainted. Over ten per cent of the surface drained, is made up of the Crooked, Seneca, Canandaigua, Cayuga, Owasco, Skaneateles and Cross lakes, and of water surface in the marshes, all acting as reservoirs and regulators of the flowing of the river. The water in these lakes is very pure, and their shores are generally high and healthy, and the marshes are surrounded by the most fertile agricultural country in the State, but in these marshes the water is contaminated and becomes so saturated with pestilence as to have conferred a very unenviable reputation for fevers along the course of the river; not only is this true of the immediate borders of this stream, but for many miles the air is injuriously affected. These marshes have been deposited by running water, until, by their rise and the receding of the water, their surface has been exposed to the air, when there commenced a most luxuriant vegetation, which, dying every autumn, elevates the soil upon which it grows. The bottom of the river is a mass of broken and decaying shells, from parti-

cles too small to be seen by the naked eye, to some inches in length. These fragments are bedded in a mud that may be said to be fluid so soft that a pole can be forced into it, by the power of a single man, many feet deep.

Sixth. I am requested to estimate the quantity, character and cost of the excavation necessary to reduce the surface of the river, in low water, 1 foot, 2 feet, 3 feet, 4 feet, 5 feet and 6 feet. To determine these questions with anything like accuracy, would involve a vast amount of measuring and calculating, for which sufficient time has not been given; but perhaps enough has been done to meet the objects that the commissioners had in view. To reduce the surface, in low water, 1 foot, it would be necessary to move 20,222 yards at Mosquito point, which, at thirty cents a yard, would be $6,066; take from Bluff point shoal 111,416 yards, at 10 cents, would cost $11,161; at Hickory island 2,222 yards should be moved, which, at 10 cents, gives $222; in all, $17,440.

To reduce the surface, at low water, 2 feet: At Mosquito point excavate 35,777 yards at 30 cents, gives $10,733; at Bluff point and Hickory island, 264,487 yards at 10 cents, amounts to $26,448; at Jack's reefs it would probably be sufficient to cut down the bottom of the canal as proposed, this would cost $9,386; in all, $46,557. These calculations are made to answer the interrogations of the commissioners, and are for low water only, and to carry 1,400 cubic feet of water per second; in high water such excavations would produce but little effect. The questions in relation to 3 and 4 feet of water, have probably been sufficiently answered. To reduce the water at Montezuma 5 or 6 feet, would involve the loss of most of the declivity in the stream, as Montezuma is but $8\frac{1}{2}$ feet above the water on the Baldwinsville pond, and if 5 feet be deducted, it leaves only $3\frac{1}{2}$ feet fall to be distributed over the whole distance, giving about 0.14 feet to the mile. To reduce the surface 6 feet, would leave only about 0.1 foot per mile fall. Cuts wide enough and deep enough to carry even the least water of summer down so slight a declivity, would cost very large sums, as comparatively little mud could be calculated upon as moving under the action of the water. The surface of the water could not probably be kept at these depths if once lowered to them, as in a current so slow the channel would fill up.

Seventh. As to the effect of reducing the water in the river upon the navigable waters connected therewith. The Erie canal now crosses the river in its waters but the enlarged canal is in

the course of construction, and the aqueduct which is to carry the canal over the river will soon be finished. The Seneca canal is locked down into the river on both sides, but will probably be carried over it in preference to rebuilding the present dilapidated wooden locks. The Cayuga lake canal is locked into the lake at Cayuga bridge. The present lock is old, of wood, and must soon be rebuilt, and if the lake is lowered it will be necessary to place the foundation to suit the change. Cayuga lake is shallow at its north end, and the wharves at Cayuga bridge and all the way up the shore as far as Springport have but enough water to float loaded boats, but these wharves can be extended into deep water with little cost except at Springport; there any considerable reduction of the lake's surface would make it necessary to dredge out the harbor. The low lands at the head of the lake would be much benefited by a reduction of even 1 foot. The whole lake shore would be improved by so deepening the river as to cause freshets to go at once down it, and thus keep them from raising the lake.

Having as far as I could answered the interrogatories put to me by the commissioners through you, and having expressed my own views as to the proper plan to be adopted it only remains for me to add that I herewith transmit to you a map of the river from the Cayuga lake to Baldwinsville made from actual survey. This is the first survey ever made of the river from the lower end of Howland's island to Jack's reefs so far as I can learn. The measurements of the surface of the water were made with a line 1,500 feet long, having buoys on it to keep it on the top of the water and to mark distances. This was drawn on the water by one boat while another was at the other end to hold the line fast to a stake, while a third boat took the soundings and the courses of the river. In order to use the compass it was necessary to push a pole into the mud and use an arm made for the purpose that moved up or down the pole to the proper place, and was then wedged fast. These water measurements were afterwards checked at various points upon monuments set up by a surveyor who run a line upon the land. This mode of taking the courses of the river was necessary, as it is only at points sometimes miles apart that it was practicable to get to the river's edge through the marsh.

So much of the map as shows the country above Howland's island on the west side of the river was copied from a map made from a survey of C. A. Olmsted, the present division engineer.

For the purpose of aiding in future observations on the rise and fall of Cayuga lake, benches were made near Cayuga bridge. These benches are cut in the face of the rock on the east shore. One of them is 222 feet southerly from the center of Cayuga bridge. Another is 182 feet southerly from the same place. All these benches are on the same level, and are 8,137 feet above the surface of the lake as it was on October first, last.

All of which is respectfully submitted by your obedient servant.

GEORGE GEDDES,
Civil Engineer.

Following is a list of the lands assessed in 1825:

1852. February 3, Assembly No. 33, Seneca lake:

To prevent the recurrence of extreme high water in the lake, the old lock below Geneva should be removed to increase the discharge of water from the lake, and the level from the lock to Geneva reduced to the dam at Waterloo. Dam of brush and stone at the outlet should be removed, and channel opened to give free discharge. "These improvements perfected, it is thought that a good navigation can be maintained in the Geneva level without maintaining a high stage of water in the lake, and thus rendering the State *obnoxious* to the charge of inflicting an injury upon the inhabitants residing upon the lake and liable to be affected thereby."

1853. January 27, Assembly No. 23, Seneca lake:

By chapter 313 of the Laws of 1844, the canal commissioners were authorized to lower Seneca lake 1 foot. Under water excavation for 2 or 3 years, in Seneca outlet and Geneva level, this season, brought to a close.

1854. January 31, Assembly No. 65:

Drainage of Cayuga marshes authorized by chapter 178 of the Laws of 1853, and placed under the canal commissioners. Surveys and estimates completed, and Jack's reefs and Mosquito point put under contract.

1853. April 12, chapter 178 of Laws:

1. The canal commissioners are hereby authorized and directed to cause to be removed with all reasonable dispatch, all such bars or other obstructions from the channel of the Seneca river between the Cayuga lake, in the county of Cayuga and the village of Baldwinsville, in the county of Onondaga, as in their judgment may be necessary to lower the channel of said river, and

as will most effectually cause the draining of the swamps and marsh lands bordering on said river and its tributaries, and shall have power to employ such engineers, agents or servants, and to make such contracts for, or in other ways to cause such work to be done, or to purchase such material therefor as in their judgment may be necessary to accomplish the purposes of this act.

2. Said commissioners, or any one of them, are hereby authorized for the purpose of paying for the services of such engineers, agents or servants, or contractors, or for work done, or materials furnished for the purposes of this act, to draw his or their draft upon the Comptroller, who shall issue his warrant upon the Treasurer for the payment thereof. But no such draft shall be made at any one time for the sum of more than $10,000, nor shall a sum larger in the aggregate than $15,000 be paid in the year 1853.

3. Said canal commissioners shall keep an accurate account of all moneys expended under this act; and shall as often as once in 6 months during the progress of the work herein directed to be done, make and certify a statement thereof, and file a copy in the office of the Comptroller.

4. The sum of $100,000 is hereby appropriated for the purposes of this act, to be paid out of any moneys in the treasury not otherwise appropriated.

5. The said canal commissioners shall, as soon as practicable, after the completion of the necessary works for the effectual draining of said land, as herein provided, make out and certify a statement showing the whole amount of money drawn from the treasury and expended on said works or in the construction thereof which statement shall be filed in the office of the Comptroller, and upon the filing of such statement and certificate, it shall be the duty of the Comptroller to inform the Governor that such works are completed and the statement of cost filed as aforesaid. And upon the receipt of such notice, the Governor is hereby authorized to appoint three disinterested persons who shall be freeholders and residents of this State to act as appraisers.

6. Examination of land by appraisers. Statement under oath. Examination of witnesses.

7. Compensation to appraisers.

8. Awards or assessments subject to appeal.

9. Award for damages added to sum to be expended.

10. Apportionment by Comptroller. Statement of apportionment to be sent to county treasurers.

11. Statement to be sent to supervisors. Tax to be levied and collected. Money to be paid over to persons entitled thereto.

1853. February 17, Senate No. 35. Report of committee relative to draining the Cayuga marshes: (That on which the preceding law was based.)

Petitions have come to committee.

Petitioners represent 9,000 acres marsh land and 20,000 of others overflowed by Seneca river.

Partly in consequence of the construction of the Erie canal across a portion of said marshes near the village of Montezuma.

Lands now of little value. Will be when drained of great value. Erie canal supplied with water from lake Erie and from feeders between Buffalo and Montezuma.

Lockage downward from Buffalo and also from Jordan, and large proportion of surplus water of the canal between Buffalo and Jordan is discharged into Seneca river at Montezuma, thereby greatly increasing the amount of water from that ordinarily flowing in the river to damage of land and health.

Lands could be redeemed by removing bars in river between Cayuga lake and Baldwinsville; expense estimated in last year's report preceding.

Pray for law improving and assessing cost on lands benefited.

Deleterious condition a source of solicitude from first settlement.

Repeatedly attracted attention of Legislature.

Refer to history as follows:

In the year 1824, as appears by session laws, chapter 168, of that year, a law was passed making it the duty of the canal commissioners to cause an examination to be made by engineers in their employ of the condition of the Seneca valley from the Onondaga outlet of Jack's reefs to the Cayuga lake, and to take measurements, soundings and levels with a view to reclaim the marshes commonly called the Cayuga marshes; also to ascertain the practicability of draining and reclaiming the marshes adjoining the Seneca and Cayuga lake respectively; also to examine the condition of the works constructed upon the Seneca outlet with a view to the improvement of the navigation from the Erie canal at Montezuma to the Seneca lake at or near Geneva; and that the said engineers be required to report their proceedings with all

convenient speed to the Legislature, setting forth what would be the most eligible mode, the probable expense and the consequent advantages of the proposed improvements and the effect such improvements would have on the Erie canal.

In the year 1825, under date of January twenty, David Thomas, the engineer appointed by the canal board to perform the duties directed by the act aforesaid, submitted his report to the Legislature in which he says in regard to the Cayuga marshes:

That these extensive tracts may be rendered arable by lowering the surface of Seneca river 2 feet at the foot of Cayuga lake. To effect the proposed object the surface should be lowered 3 feet at the head of Jack's reefs, above which place the river consists of deep pools separated by a few bars of diluvial matter. Of these bars the principal are at the foot of Cayuga lake, at Martin's rapids (two miles below), and at the Mosquito point, where the descent of the surface at a medial height of the river is 2 inches in 20 chains. If the back water be drawn off from the first of these rapids it is evident that the current issuing from a greater head will diminish in volume over the bar as the velocity increases, and that this depression of the surface will extend upward to the next rapid, and though the effect will successively decrease as it extends, only moderate excavations at those bars will be required to obtain the proposed reduction at Cayuga lake.

At Jack's reefs the river is 160 yards wide, and descends 6 feet in 137 chains. The upper bar, about 80 rods in length, consists chiefly of gravel and rounded stones over which the water falls 18 inches into a pool from 5 to 7 feet deep of nearly the same extent. Near the lower end of this pool the soft whitish limestone which forms the bed of the river downwards for 2 miles first appears, and may be easily excavated without blasting.

To discharge the river through these obstructions it is proposed to excavate a channel 30 yards wide, commencing where the surface is 6 feet lower than at the head of the rapids and operating upwards on a horizontal bottom. The estimate for this work including the bars up the river is $125,000.

This estimate has not been made without much deliberation. In addition to the expense of constructing coffer-dams arises the difficulty of disposing of the stuff to be excavated, for no part ought to be left on the present bed of the river to obstruct the discharge of floods or to embarrass any future attempts to

enlarge the channel. A great part of this work must be done opposite to high banks, and the distance to deep water into which it might be dropped is considerable.

For deepening Erie canal at crossing.

By considering the effect of back water on sluggish streams it will be found that not only the Cayuga marshes and the swamps below Ithaca, but much wet land even above the level of Seneca river will be reclaimed by the proposed improvement of the channel. The expense will bear but a small proportion to the advantages.

The advantage to be gained by reclaiming these tracts, redeeming from desolation; increasing canal revenues.

The report of the engineer, as aforesaid, was referred to the joint committee of the Legislature upon canals and internal improvements, and on the twelfth of March (see Assembly Journal of 1825, p. 767) the committee made the following report:

The reclaiming important. Want of information delayed it. Information obtained under act of April 5, 1824 and herewith presented.

Engineer does not doubt feasibility.

Land most fertile.

Marshes produce great sickness.

Land will be most productive.

No survey to determine exact number of acres to be benefited, but believed to be not less than 40,000 acres. Cost of improvement $125,000.

It is undoubtedly correct in principle that the owners of the land should sustain the principal part if not the whole of the expense, but to prosecute the work with economy as well as effect it is indispensable that the necessary funds be furnished reasonably and with promptitude. Owing, however, to the dispersed situation of the owners and the inability of many of them to contribute their proportion of the expense at such times as the work may require, this cannot be done without much delay nor without affording great room for individual speculation at the expense of the present owners. The committee are therefore of opinion that, considering the great importance of the measure in promoting the health and convenience of a widely extended country and in largely adding to the agricultural wealth of the State, a wise and liberal policy would dictate to the Legislature to grant reasonable aid in the completion of the contemplated work. They therefore recom-

ment that the necessary moneys be furnished by the State, and that the State be reimbursed by a tax to be assessed upon the lands to be benefited with such time for payment and such conditions as under the circumstances may be proper.

And in accordance with the foregoing report the Legislature at that session (See Session Laws of 1825, chap. 208) passed a law containing the following provisions:

Commissioners appointed and authorized to employ.

Duty to survey benefited lands and make assessment-roll.

Authorized to construct works to drain said lands to cost of $80,000.

Money with six per cent interest to be repaid by tax.

Provisions as to manner of letting contracts.

As soon as water is sufficiently lowered.

Tax equal to whole expenses to be assessed.

Provisions as to reports.

On the twentieth of February in the succeeding year the commissioners appointed under and by virtue of the aforesaid act submitted to the Legislature the following report (See Assembly Journal of 1826, p. 606):

The main difficulty in draining the Cayuga marshes and swamp lands in the valley of the Seneca river and about Cayuga lake is presented at Jack's reefs on the Seneca river. The river at this place is confined in a narrow and rocky channel forming a succession of small rapids having in all a perpendicular descent of 7½ feet. The rock in the channel forming a natural dam renders the Seneca river and its tributaries as far as Cayuga lake at all seasons of the year deep and sluggish streams, and in high water on account of the scant passage at Jack's reefs the accumulated floods are thrown back for so long a time upon the extensive and level country bordering upon the river and its tributary streams as to render it wholly unsusceptible of cultivation.

The objects to be attained at this place are to procure a free passage for the floods and also to reduce the water above to the same level or as nearly so as may be necessary with the water below the reefs. Two modes of accomplishing these objects were taken into consideration by the commissioners: First by removing the rock in the channel of the river, and secondly by constructing a drain or channel across the peninsula formed by a curve in the river.

Upon examination of the material of which the peninsula is composed it proved to be principally a slate rock much softer and easier of excavation than had formerly been supposed. The commissioners therefore determined upon constructing a drain through the peninsula, because the work could, in their opinion, be accomplished at less expense in less time, the situation be more healthy, and the work be entirely protected from those casualties to be feared if it were to be carried on in the channel of the river. The drain commences at the foot of the reefs and passing through the peninsula on a horizontal plane, enters the river in deep water above the head of the reefs so as to derive a benefit from the whole perpendicular descent.

The drain is 260 rods in length and 40 feet in width on the bottom; the average depth of excavation 21.28 feet, and having a slope of 1.4 perpendicular, and contains in all 146,000 cubic yards of excavation. Whether this drain will be sufficient to answer the intended purposes can be fully determined only by experience, as the quantity of water discharged by the river at different times is very fluctuating. The commissioners are, however, of the opinion that in low water the drain will be sufficient to lay the channel bare, and in case a larger outlet may be found necessary for the floods, a considerable portion of the rock in the bed of the river may then be removed at a trifling expense, sufficient probably to answer every useful purpose. The drain was put down under contract on the twenty-second day of June last, at the average price of 24 cents a cubic yard. Owing, however, to the sickly state of the men, and other embarrassments early in the season, and to the fact that the contract was taken at a price much below its true value, the contractors failed to perform their contract which was given up on the first of February, inst., at which time the amount of excavation performed was 40,248 cubic yards and 66 chains, grubbing and clearing, and has been paid for as follows: 16,234 cubic yards at twenty-four cents, $3,896.16; 24,014 cubic yards at 15 cents, $3,602.10; 66 chains grubbing and clearing, $100.

On the second day of February, inst., the contract for performing the residue of the excavation was relet at the price of 35 cents a cubic yard, to be completed on the first of June, next. The price under this contract being about a fair one, and the contractors

having given ample security for the performance, it is believed it will be punctually performed.

The commissioners have not yet taken any measures for the removal of the small bars between Jack's Reefs and Cayuga lake, being under an impression that when the waters of the river should be lowered by removing the obstructions at Jack's Reefs, the bars would be more accessible and more easily removed. It is believed, however, that they may be removed without incurring any serious expense. The survey of the lands has been made as required by the law, and the assessment-roll filed. The following is the result: Open marsh, 8,873 A.; land partly marsh and partly swamp, 3,398 A.; swamp 16,213 A.; total, 29,485 A. (For statement in detail, see Senate Doc. No. 66 of 1852.)

Total valuation of above, $24,485.34. Arable lands will probably be benefited also.

Money actually expended, contractors at Jack's reefs, $7,598.26; survey engineers and other expenses, all, $2,626.74; total, $10,225.

Should the works at Jack's reefs be completed early in the ensuing summer as it is now believed they will, it will be practicable to remove the small bars in the river during the remainder of the season. The observation of the last season has convinced the commissioners that the whole work of draining the Cayuga marsh and swamp lands may be more easily accomplished than has heretofore been supposed. And they are satisfied that unless there be some hidden or unforeseen difficulty, the present appropriation of $80,000 will be amply sufficient.

Self praise.

An investigation into manner of letting contracts.

Law amended appointing new commissioners.

It will be seen that the express provisions of the foregoing statute required the new commissioners thereby appointed to carry out the contract and necessarily the plan adopted by their predecessors, whether they were satisfied with its feasibility or otherwise.

It should also be noticed that the original plan, as recommended by the accomplished engineer, David Thomas, was not adopted by the commissioners in making the contracts which were confirmed by this act. But the plan adopted and thus confirmed by law was entirely different in character from that recommended by that scientific engineer, after a careful and deliberate examination, and as

time has proved, was entirely inadequate to the accomplishment of the great object for which it was designed.

Mr. Thomas, who was also made a commissioner by the act of 1826, soon after his first report to the Legislature, tendered his resignation.

Several other gentlemen, who were from time to time appointed to fill vacancies in the commission, also resigned or declined to serve.

The commissioners in charge of the work under the law as amended February 3, 1827, submitted their annual report to the Legislature (see Assembly Journal, p. 591), which contained the following sentences :

Work continued. Much sickness.

Yards to be removed, 146,500. Removed 116,706. Expended $36,928.

Thus nearly eighty per cent done for less than fifty per cent of appropriation.

But the next year (1828) it appears by Assembly Journal, page 690, the commissioners then in charge reported that $20,000 more would be needed to accomplish the object.

Legislature gave it. Session Laws of 1828, chapter 292.

In 1829 (Assembly Journal, p. 683) commissioners about to consider Thomas' plan.

Pursuant to the advice of David Thomas, Esq., who is well known as an able and experienced engineer, a contract has been made for cutting a channel in the bed of the river at Jack's reefs, to include about 20,000 yards of excavation. This channel is considered necessary to assist the ditch in carrying off the waters in high floods, and to prevent their rising so as to overflow the banks of the river. The bar appears to consist of small stones and gravel, and there is a prospect of draining it at a small expense. The length of the cut will be about 15 chains, and the depth and price of excavation will be determined on further trial. The work has been commenced, and will, we trust, be vigorously prosecuted.

A contract has also been made, by the advice of Mr. Thomas, for excavating a channel in the bed of the river on the bar at Mosquito point, 100 feet wide, 4 feet deep at the highest part of the bar, and about 60 rods in length. This necessary and important cut will probably cost about $5,000. It will soon be commenced, and will be urged on with the utmost dispatch.

The labor and expense of removing the other bars and obstructions in the river will be comparatively very small, and, as we hope, of easy execution.

We deem it a duty, which we owe to the Legislature as well as to ourselves, to state causes of retardation. Sickness and abandonment of contracts.

Under all these embarrassing circumstances, and many more which might be stated, a ditch has been completed, which is at least 264 rods long, 40 feet wide, and an average of 24 feet deep, and has been cut through strata of rock and earth extremely difficult of excavation.

Money expended nearly $80,000.

Work will be completed present year and be successful.

No action by Legislature in 1829. Again up in 1830, and dissatisfaction expressed. Laws of 1830, chapter, 326, directed investigation of accounts. Report of investigation in 1831 Assembly document No. 70. Proceedings ordered against commissioners. Assembly Journal, 1831, page 652. Report of Attorney-General, Assembly document No. 6, 1832.

Sufficient developments had been made at this time to render it certain that the drain upon which so much money had been expended was entirely inadequate to the accomplishment of the object; consequently a law was passed on the 26th of April of that year, 1831, directing the canal commissioners "to cause the Seneca river to to be surveyed below the Cayuga lake down to Jack's reefs by a competent engineer, and an estimate made of the sum which might be necessary to be expended to effect the object contemplated by the act appointing commissioners to drain the Cayuga marshes, and report their opinion thereon to the next Legislature."

The canal commissioners, pursuant to the act aforesaid, made their report to the Legislature on the 25th of January, 1832 (Assembly Doc. No. 51), in which they say Geddes was appointed engineer, and that cold weather prevented completion of surveys. Report of what was done submitted. Benefits of drain already cut not material. Could not be. Better to experiment by removing bars from river. Report of engineer says: "When the deep narrow cut was made across the bend of Seneca river, below Cross lake it was supposed that the operation would be to drain the water from the Cayuga marshes very low by midsummer, but

that it would not be taken off sufficiently early in the season. Results have been quite otherwise. The spring floods recede until June or July, when the water commences rising, and continues on the rise until the first of October, later or earlier according to the setting in of the fall frosts, which cut down the luxurious growth of herbage that had risen in the bed of the river during the hot season, and obstructed the passing off of the water.

Risings and fallings determined with great accuracy at lock near north end of Cayuga lake.

Thus it appears that the water in the outlet, and consequently in Cayuga lake, was higher in September and October than in April, raised and held up by the herbage growing in the bed of the river. The vegetables springing up here in warm weather are named by the fishermen eel-grass, and classed by the botanists among the very numerous class of confervæ.

From measurements made at the lock near the mouth of the lake, and at the lock at Montezuma, the fall in the river between these two locks was found to be 11 inches, in the latter end of November last. In the six weeks preceding the thirtieth of November the water had fallen 18 or 20 inches, and during said time there was a rise in the river below Baldwin's dam of between 30 and 36 inches.

From the view above taken it is obvious that much would be effected by deepening the extensive shallow below Mud creek, marked on the map No. 6. The next in importance is above the Erie canal, and marked No. 5.

Taking mud out of water at depths of from 2 to 5 feet has been done in this river where the Erie canal passes, and 25 cents the cubic yard has been found about the cost.

Session laws 1832, chapter 282, extends powers of canal commissioners.

Further report by canal commissioners, February 23, 1833. Assembly document 192. Nothing new.

Nothing more done until 1851.

Chapter 503 of 1851 provides for three commissioners to examine and report best plan of draining and reclaiming the marshes. State Engineer to make surveys.

Commissioners appointed and report made. See Senate document No. 66, 1852, preceding.

what to retard the progress of the water. And it is a question worthy of serious consideration whether the plan adopted by the Canal Board for the enlargement of the canal across these marshes will not materially augment the evils which already exist.

It is evident that the obstructions already alluded to, which cause the water to rise over these marshes and in the Cayuga lake during the warm and dry weather of the year, are not only productive of serious injury to private property and then public health, but consequently reduce the flow of water during the dry season in the Oswego river, and thereby cause embarrassment to the navigation of the Oswego canal and in the use of the hydraulic works on that river.

Thus it appears that the evils which have been the source of so much complaint for more than a quarter of a century do not decrease as time rolls on.

The time has now arrived when the progress of our public works demands that those subjects should receive the careful attention of this Legislature.

Help to stability of Richmond aqueduct and embankments.

Important to make lands productive and to preserve public health.

It is represented that during a period of several months in each successive year the miasmas arising from this pestilential desert are wafted by every wind that blows over the populous regions of the State for more than a hundred miles in extent.

Even if other great and controlling reasons did not exist the magnitude of this evil alone, in the opinion of your committee, demands the profound deliberation of the Legislature and to perfect the remedy is an object worthy of the untiring energy of the strong arm of the State.

Signed by committee.

1855. January 22, Annual Report of Canal Commissioners, page 149. Report of supervision. Progress of work.

Maps and estimates of former superintendent compared with plan. All submitted to State Engineer, who replies:

I recommend the following general plan for reducing the water of Seneca river above Jack's reefs:

A channel to be excavated in the bed of the stream, as laid down on the map, which channel should not be less than 100 feet wide on the bottom, with side slopes of at least $1\frac{1}{2}$ feet to 1 foot.

The materials taken from the excavation should be deposited so as not to interfere with the free and unobstructed flow of the stream at high water and so placed as not to be removed by the action of the water in times of extreme freshets. With the view of dispensing with all work on the old ditch under the present contract, I would recommend that the high places in the bed of the river outside of the coffer-dam to be constructed should be reduced to the line indicated on the map and in width not less than 200 feet in all cases where entire width of the river does not exceed 300 feet.

The bottom of the ditch should be commenced at the foot of the reefs at a point not less than 6 feet below the surface of slack water and rise in the whole length of it 1 foot, which ascent should be uniform.

JOHN T. CLARK,
State Engineer.

Progress report. Expended $15,487.25 on Jack's reefs.

Progress report on Mosquito point. Nothing yet done.

I am of opinion that the intermediate bars should not be let, as they are so soft that when Jack's reefs are removed the action of the water on them will probably do all that is required.

About the first of May last in the river the water was uncommonly high; during the freshet high-water mark was noted at the principal points on the river, and during the extreme low water of last fall the low-water marks were also noted for future reference.

All that I have learned by my observations during the past season has confirmed me in the opinion that the plan adopted for draining the Cayuga marshes is the only one that can prove effectual.

All of appropriation cannot be expended this year. Balance and $50,000 should be reappropriated. Estimated quantities probably large enough. Work should be pushed and completed in next season.

1856. February 1, Assembly No. 100, annual report of canal commissioners. Report of Geddes to commissioners. Work on Seneca river prosecuted as rapidly as possible. Total expense at Jack's reefs estimated at $130,268.34.

Reference to chapter 178, Laws of 1853.

A careful survey of the river from Cayuga lake to Baldwinsville was made by the undersigned in 1851; another survey was made by the late William A. Perkins, civil engineer, in 1853 by the direction of the canal commissioners, under and by authority of said law.

My own maps and profiles, and also those of Mr. Perkins were submitted to Hon. J. T. Clark, State Engineer and Surveyor, together with my plan for doing the work. Mr. Clark gave his written approval, a copy of which appears in my report of December 26, 1854.

All the facts in the case went to show that the only plan by which the Cayuga marshes and swamp lands could be effectually drained as required by the words of the act was to remove Jack's reefs by deepening a part of the channel of the river by a canal, wide and deep enough to allow the ordinary flow of the water to pass on a level 4 feet lower than it did before the improvement was made; and to so remove the obstructions from the remainder of the bed of the river as to allow the freshets to pass off freely.

Jack's reef bar and the bar at Mosquito point are the only obstructions in the channel of the river below Montezuma that are too hard to be removed by the action of the current. Jack's reef is the great obstruction, and at this point is the principal fall in the river. Economy required that this obstruction should be so effectually removed that the fall should be transferred from this point to the soft bars that are in the river above so that it might be available in carrying away the mud and depositing it in the deep places that are found immediately below those bars. No plan for draining the marshes will ever prove effectual or economical that does not provide for a free discharge of the water at Jack's reef and that does not make the best possible use of all the declivity in the river between the marshes and the Baldwinsville dam. The fall at Jack's reef, in October, 1851, was $5\frac{1}{4}$ feet, which was nearly equal to all the declivity in the river from the head of the reef to Cayuga lake.

The river above Jack's reef is so nearly level that the current is sluggish and mud bars are deposited by its various tributaries just below the point where they join the main stream. In high water the declivity of the water above Jack's reef is still less than it is in low water. Careful observations have been made during the last two years in regard to the flow of the river, and many

interesting and important facts learned; all going to show that Jack's reef constitutes the real dam that holds the water on the marshes. It is in fact practically the lower end of Cayuga lake in high water. On the twenty-fifth of last April the whole fall from Cayuga bridge to Jack's reef was but 2.99 feet, the distance being 28 miles, giving a declivity of less than 0.11 feet to the mile.

If the reef had then been cut down the fall would not have been less than 7 feet in the 28 miles which would have been 0.25 feet to the mile. The declivity would not have been uniform, but would have been formed at the various shallow places in the river.

The increased currents thus produced on the mud bars would in time move them out of the way; assisted by a dredging machine the work would be quickly and economically done.

Mosquito point bar is made of gravel and is too hard to expect much immediate effect from the action of the increased current and must be removed by a dredging machine. An opinion has prevailed in the minds of some of the marsh owners, that great benefits would be derived by removing this bar, even if Jack's reefs were not cut down. This is a mistake.

Mosquito point rapids have but 0.5 feet fall in low water, and much less in hight, and if entirely removed could, at the best, only lower the water above to the level of the surface below. When Jack's reef is taken away, Mosquito point bar will become the dam and must be removed for precisely the same reason that now demands the removal of Jack's reef.

In my report in 1851 I estimated the quantity of earth necessary to be removed at Mosquito point to be 66,889 cubic yards, and the price, at 30 cents a yard, amounting to $20,066. This work should be put under contract, so as to have it completed by the 1st of April, 1857.

Jack's reef next December. Water should be let in in cold season. I have not made any precise estimates for dredging the bars between Jack's reef and Mosquito point, as from the nature of the case it is not practicable to form a reliable opinion of the cost of moving the soft mud, assisted by the increased current; but I think that an appropriation of $60,000 will be required to cover the various items and contingencies mentioned in this report.

Will do their work.

The effect upon Cayuga lake will be in every respect beneficial. Now then, Canandaigua or Clyde river, reaching nearly to Roches-

ter, and rapidly rising in the spring, fills up the Seneca all the way to Jack's reef, and then flowing south, fills up Cayuga lake until there is sufficient declivity thus created to force the water over the reefs.

When the bars are cut away, the freshets will at once go down the river, and so much of the high water as comes from the Canandaigua will have run out before the Seneca river will have raised Cayuga lake injuriously.

Thus the freshets that now all accumulate in Cayuga lake, will be divided and distributed through a much longer period of time, beginning sooner and lasting longer and never rising so high as they do now. It is the freshets that do the damage, and the improvements in progress are intended to provide for their discharge.

Signed by Geo. Geddes.

1857. February 2, Assembly No. 145, Annual Report of Canal Commissioners. Report of Geo. Geddes on Cayuga marshes.

Work done to date cost $130,239.56. Total excavated, 41,085.88 yards earth, 62,297.74 yards rock, 9,331.72 yards clay; total, 112,715. Total cost estimated at $156,339.56. Estimate for Mosquito point bar, $20,000.

When Jack's reef and Mosquito point bar and a soft, small bar at Hickory island, which is between the two first-mentioned bars, are removed, the doubts that have existed in some minds as to the practicability of draining the Cayuga marshes, will be removed, and such is the character of the work that will then remain to be done, that the current of the river, increased and made efficient by the removal of these bars, will, with a very little aid from a dredging machine, accomplish the object.

Cost less than benefits.

It is, perhaps, proper that I should make some reference to the fears that have been entertained by persons living on the shores of Cayuga lake, that we might so reduce the surface of the water as to injure their landings. These fears are groundless, but they are entertained so strongly that in the low water of 1854 complaints came to me that we were reducing the lake injuriously, when in fact we were obstructing the flow of the water by our coffer-dams.

The bar of the lower end of the lake will preserve its low-water level, and the hard gravelly bar on which the free bridge crosses

the river just below the lake, is a barrier which abundantly protects wharf owners on the lake. And the crossing of the Seneca canal, by its locks on each side of the river, and its towing-path bridge make it easy to stop the flow of the river whenever required, by putting some plank into the channel along the bridge. The fears are groundless, and the means of protection abundant.

The effect on Cayuga lake as set forth in my previous reports, will be to prevent high water by sending the freshets directly down the river. This will be a great advantage to all parts of the lake shore, and especially so to the upper end.

Careful examinations of the river from Cayuga lake to Baldwinsville in 1851, and during the last three years, made at every extreme of high and low water, make me confident that this enterprise of draining the Cayuga marshes will do no injury whatever, but that every interest will be benefited.

The freshets will be sent directly down the river, and not allowed to injuriously fill up Cayuga lake. The aqueduct and embankment across the marshes of the enlarged Erie canal will be relieved from the pressure of high water. The water-power created by the various dams across the river from Baldwinsville to Oswego, will be rendered more valuable by the more even flow of the water, and by the increased surface given to the Baldwinsville pond, which increase will equal twelve square miles. The freshets passing off more freely, the obstructions to navigation in the spring on the Oswego canal heretofore caused by high water will be much less. The health of a large district of country will be improved, and a vast tract of now worthless land will be made productive in the highest degree. A full completion of the plans of the commissioners for this work it is confidently believed, will accomplish all these benefits.

Signed by George Geddes.

At last accounts Cross lake had receded 2.5 feet, and was expected to recede 4.5 feet, this reduction to extend to Mosquito point. One hundred thousand dollars has been appropriated. This year's supply bill appropriates $25,000, and $55,000 more will be needed.

1858. April 13, Laws chapter 179 :

SECTION 1. It shall be the duty of the canal commissioners to cause to be removed from the outlet of Cayuga lake or channel of Seneca river at and in the vicinity of the junction of the Cayuga

and Seneca canal, with the said river or outlet, the piers or abutments of the old towing-path bridge, and such other obstructions as tend to prevent the natural flow of the water in the river, and also to dredge out the channel of the river for a sufficient distance above and below the aqueduct constructed for the purpose of carrying the Erie canal over the Seneca, Canandaigua, and Clyde river, so as to allow the waters of those rivers at all times to pass off without obstruction or impediment, and as readily and freely as they would naturally do if no improvement for the purposes of the canals were made; and the expense shall be paid out of any money appropriated to the enlargement of the Erie canal.

§ 2. The expense of the above work shall not exceed the sum of $30,000.

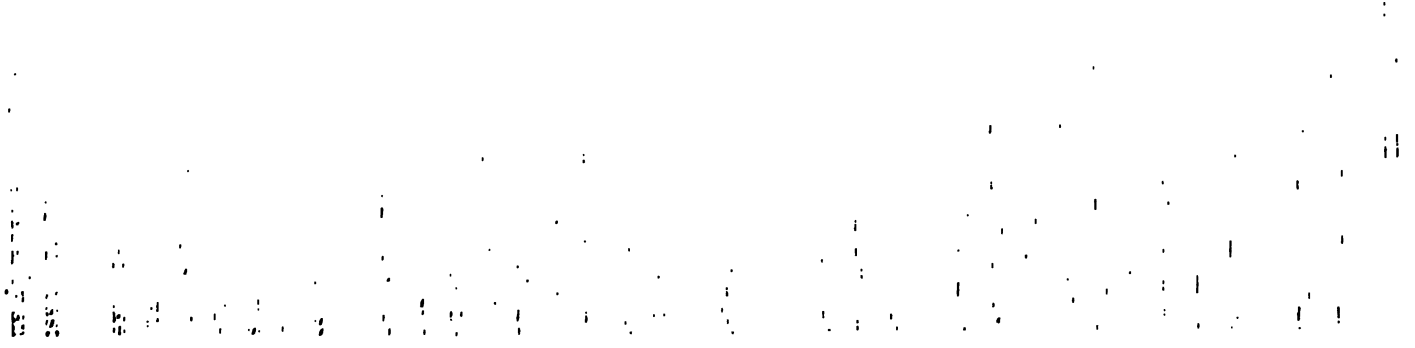
1858. February 4, Assembly No. 20, Annual Report of Canal Commissioners, report of Geo. Geddes on Cayuga marshes:

Progress report of work on Jack's reefs. Ditch being dug outside of coffer-dam which should be finished. Also the gravel dam put in by contractor should be removed. The cost, in addition to the estimates now given to the contractor, will not exceed $200. The estimates amount to $150,409.54.

On the thirty-first of March last, by order of the commissioners in charge, I made a special report of the effect of our work on the river. From this report I make the following extract:

At the time of opening the gates in the guard-dam, January twenty-first, the river was the lowest it had been at any time since the work commenced, Cross lake being 3 inches lower than it was in the very dry season of 1854. In two weeks the water fell 4 feet in Cross lake and 2 feet 10 inches at the bridge at the head of Mosquito point bar, about the same at the bridge of the direct railroad and 2 inches at Montezuma, the principal part of the fall being lost on the sand bar above the railroad bridge. The measurements were made just before the freshets commenced raising the river.

In the forepart of February, there was a heavy freshet, and on the twentieth day of that month a greater volume of water was passing Jack's reef than at any time since my connection with the work. The beneficial effects of our cut became even more apparent in high water than it was in the low water that preceded it. The water in Cross lake did not reach the old high-water mark by 5 feet. At Mosquito point the water did not reach last year's high-water mark by 3 feet 10 inches. The difference was about the



aqueduct and embankment over the river and marshes will have on the flow of the river. There is a fall of about 5 inches to the mile from Cayuga lake northward to and beyond the railroad bridge. This declivity gives a considerable current to the water running over the marshes. The embankment of the enlarged canal running entirely across the marshes will act as a dam, and thus all the water will necessarily be forced through the aqueduct.

The river where it is crossed by the canal is divided by Kipp's island into two channels. Into the west channel empties the Canandaigua river. This channel has been filled up, and to provide for the water that formerly flowed through it a cut of about 150 feet wide has been made across the island above the canal, and all the water thereby carried to the east channel.

The west channel by Kipp's island is commonly called the Canandaigua river down to its junction with the other channel. The east channel is usually known as the Seneca river. The west or Canandaigua channel was deep for its whole length, averaging in low water about 16 feet. The east or Seneca channel is shallow, averaging in low water less than 4 feet deep.

The effect of carrying all this water into the east channel is, in such times as the marshes are not covered with water so as to allow a free flow over the canal, to dam it up. So that on the seventh day of November there were 2 feet difference in the level of the surface of the river above and below the enlarged canal where it crosses the Canandaigua channel. This difference had gradually increased from 9 inches on the seventh day of September. By the fourteenth of November the freshet was at its greatest height, the water flowing freely over the old canal from the lock near the Canandaigua channel westward all the way across the marsh, for a depth over the canal of more than 2 feet, thus giving a cross section of at least 15,000 feet. This free discharge of water, after it had risen over the banks, equalized the surface above and below the canal, so that there was but 0.07 feet fall in crossing the canal.

Where the embankment of the enlarged canal is finished, this 15,000 feet of waterway, that allowed the surface above and below the canal to become nearly level with each other on the fourteenth of November, will be shut up, and the water must all find its way through the aqueduct across the Seneca channel.

teenth to the fifth of December 4.68, or 0.22 a day. That is, in sixteen days, viz., from the 14th to the 30th of November, 1857, the water below the canal fell 4.25, while, in 1849, the rate of fall would not give more than 1 foot 4 inches.

These measurements were made at the same time of year when the effect of the weeds in retarding the current of the river would be the same in both cases. When Mosquito point bar and the other bars in the river are removed up to the long bar over which the direct railroad passes and the 4 feet that we have reduced the surface is brought up to Hard point bar, the discharge will be freer than it is now and the freshets will subside still more rapidly. The present declivity in low water of the river, from Montezuma to Hard point, may be put at 3 inches to the mile. When the bars below are removed it will be 1 foot to the mile.

But for the removal of Jack's reefs and the bars above, it is not easy to the undersigned to see how it would have been practicable to prevent the enlarged canal from damming up the river in high water to the great injury of the lands above to and including Ithaca, without very great cost in opening a wide and deep channel as low down the river as Campbell's island. Indeed, it may be well questioned whether the obstruction could be obviated effectually without some reduction of the bars all the way to Jack's reefs. The whole declivity in the river in 1851 in low water was, from Montezuma to the head of Jack's reefs, 3.30 feet or only about 1.75 inches to the mile. The advantage of adding 4 or 5 feet to this declivity must be apparent.

Proposals received for dredging bars. Resigns as the big work is done.

Signed by George Geddes.

1858. February 26, Assembly No. 46. Report of the Committee on Grievances, relative to obstructions in the outlet of Cayuga lake, on which the preceding law was based.

Your committee to which was referred the petitions for the removal of obstructions in the outlet of Cayuga lake and channel of Seneca river, beg leave to make the following report, and submit for the consideration of the House the annexed bill:

In order to a proper understanding of this important subject, a somewhat extended statement of facts is necessary.

In pursuance of an act passed July 10, 1851, appointing William Adams, Henry Fitzhugh and J. B. Williams a committee

to examine into and report upon the practicability of draining the Cayuga marshes and tributaries. these gentlemen, with their engineer, Mr. Geo. Geddes, made a thorough survey of the district, and in a very able report, to be found in Senate document No. 66, of 1852, demonstrated the feasibility of the undertaking.

It will be observed that the whole expense was ultimately to be met by an assessment upon the lands benefited, and that the low lands at the head of Cayuga lake were included in the survey, thus conclusively proving that they, in common with tract known as the Cayuga marshes, were to participate in the anticipated advantages of this great work.

In Senate document No. 35, of 1853, will be found the report of a committee from the Senate upon this subject. The committee consisted of .....

These gentlemen detail at length in their report the history, various plans considered, as well as the amount of work actually done to accomplish this desirable result, for the attention of the Legislature was at an early day drawn toward the removal of this foul blot from the center of the State, and they earnestly urged renewed effort to rid us of what they termed a nuisance, a source of contagion, and a blemish in what has been called the garden of the State of New York. For here are 30,000 acres of the finest land lying worse than useless which would be rendered available, producing a surplus which would serve to load our canal boats, bring revenue to the treasury, and thus add to the wealth of our commonwealth when once brought under cultivation.

In the Laws of 1853, chapter 178, may be found the act which provides for the carrying into effect the views contained in these reports; in which act it is also apparent that the tributaries were to participate in the wished-for result of the undertaking, and in accordance with this idea the locks constructed upon the enlargement of the Cayuga and Seneca canal were made to allow of a lowering of the water level of 4 feet.

Enough has been said to show that it was not designed to cut off any part of the swamp lands from the benefits to be derived from the completion of the work for which this act provides.

Your committee are happy to be able to say from information that the contract for the excavation at Jack's reefs is completed, and in the vicinity which could be affected by this work the result is all that could be desired, the water level being reduced some

4 feet. They also learn that there is a sufficient amount of unexpended balance of last year's appropriation to take out the intervening bars, and that the work is already under contract.

But your committee regret to learn that as the promised advantages to be derived from this great work are about being realized, the State herself, through the acts of her agents, has placed obstructions in the way which forbid not only the benefits anticipated, but actually add to the original difficulty.

At Montezuma these marshes are 6 miles in width; at this point they are crossed by the Erie canal, which formerly locked down to a level with the marsh, a tow-path bridge and embankment extending across; this plan with an occasional dredging to clear away the accumulating deposit and weeds which here grow rapidly, worked well.

But the canal board of former times conceived the idea of constructing a magnificent embankment across the marsh some 18 feet in height above the former water level.

In order to realize the magnitude and great cost of this work one must be familiar with the composition of the soil of this marsh. It is made up almost entirely of shells too small to be distinguished by the naked eye, and decayed vegetable matter which, when dry and exposed to the air, is of a very light nature and easily blown about by the wind, and when under the water, is soft, yielding and spongy. This soil extends to a great depth so that piles driven one upon another find no solid bottom, although frequently going down 60 or 70 feet.

The aqueduct under this embankment is completed through which it is designed to pass all of the waters of Cayuga, Seneca, Crooked and Canandaigua lakes and their tributaries. The original design consisted of twenty arches of 22 feet span and 10 feet in height from the apron below to the trunk of the canal above, but by the urgent remonstrances of persons living on Cayuga lake, these were increased by the addition of one-third and now 31 openings of the above dimensions or about 600 feet in the clear is all the space left for the waters of these lakes to make their exit.

West of the aqueduct the embankment is completed and in use for nearly one-half a mile where a temporary lock lets boats pass down to the level of the marsh as formerly. From this lock to the west bank the towing-path is of solid earth.

The citizens of Ithaca, one month after the time of the highest water mark at that place, finding their village still submerged to a great degree, appointed Messrs. J. B. Williams, Harvey A. Dowe, B. G. Ferris and J. H. Selkreg a committee to inquire into the causes of the high-water mark of the lake.

On the fourteenth, fifteenth and sixteenth days of July last, accompanied by Stephen Dexter, as consulting engineer, they visited this work and found that the arches of the aqueduct were actually 4 inches up on the trunk of the canal, and they learned that it had been 12 inches above the bottom of the canal.

While the aqueduct was thus passing water to its utmost capacity, these gentlemen report that, in their opinion, more water was running over the tow-path west of the embankment than was passing through the openings of the aqueduct and with so much force as to wash out from the tow-path large channels, thus rendering the fact obvious that this work formed a serious obstacle to the free passage of the water and to such an extent was this tow-path injured that the State was compelled to employ steam-tugs to tow boats across the marsh while the horses made a detour of some miles around to meet them on the other side.

It was the opinion of the committee that had the embankment been completed as at present designed, the consequences would have been most deplorable; firstly, to the people living on the lake who would have been submerged by the water held back by the structure; secondly, to the canal itself, for when we consider the nature of the material on which the bank is to stand the conclusion is inevitable that it cannot resist the immense pressure of the water which would be held up by it, and should it give way, canal navigation would necessarily be entirely cut off at all points west of the works, which, to say nothing of the great cost of repairing the breach, would prove almost ruinous to the credit and interests of this great State work, and lastly, though not least, is the immense loss of life and property which must result to those living below the work in the event of so terrible a catastrophe, when the released waters would rush down upon them without warning and bury all that stood in the way of their resistless progress.

Your committee are of opinion that we should deliberate long and carefully before we take a step which may be fraught with

such terrible consequences to the lives and property of our fellow citizens.

The committee of observation, in order to establish conclusively these facts proceeded below the works to ascertain how much the water had fallen from high-water mark in June; and at various points below they found such fall to be from 2′ 8″ to 3′ 8″, while above this work 8″ only gave the margin between the highest point reached in June and that at the time of their visit.

It is but fair to say, however, that the ruins of the old tow-path are not yet removed from the front of the arches and thus form something of an obstruction to the free flow of the stream.

But the fact that the arches were pressed entirely full and that the current had been so swift as to wash away the tow-path to the west, leads us to the inevitable conclusion that either the suspension of the work or the building of additional openings are imperatively required to provide for the speedy exit of the accumulation consequent on the return of another season like the past.

The experience of one of our number on the improvement made the past seasons on the Raquet river, warrants the opinion that with the most careful provision for the escape of the water through the aqueduct, still it will form somewhat of an obstruction, for the instance referred to was perfectly parallel, where the stream divided, passing round an island, one of the branches was dammed, and all the water compelled to pass through the remaining one, when it was found to set back the head water for three miles from the work, causing complaint and damage to those owning property adjacent thereto.

Since the foregoing facts were brought to the consideration of the committee, the report of the Canal Commissioners has been brought to our notice and fully corroborates all herein set forth.

Extracts from pages 112 and 113. See Canal Commissioners' report, 1858, extract next preceding this.

It will be noticed by reference to the facts that the Central Railroad Company's engineers provided over 1,200 feet of water for the same quantity of water to pass off; and that, too, where the channel was straight and clear; while this State work closes up a channel some 16 feet deep at low-water mark, and compels all the water to assume a different direction and pass off where the channel was only 4 feet at the same stage of the waters.

When your committee take into consideration the present embarrassed condition of the treasury, that this work has already cost over $500,000, and that as much more will be required to complete it, they have no hesitation in giving it as their opinion that a return to the old method of crossing is desirable, in which case a few hundred feet of tow-path bridge is all that is required, the work as far as completed would be in use and ready to be resumed when our treasury shall be in better condition to bear the drain which this vast undertaking imposes on it. This point is in the bill submitted, left, however, to the discretion of the canal board.

The Seneca canal also crosses the outlet of the lake, about two miles north of the old Cayuga bridge; here, too, a very grave error has been committed. Where the stream was originally about two miles in width, which allowed the high water to pass off quickly, thus relieving the lake at once, the tow-path has been built of solid earth nearly all the way across, leaving only 244 feet in the clear which is crossed by a tow-path bridge. And the Seneca river has been turned in above this bridge so that all the waters of the Seneca, Crooked and Cayuga lakes are confined to this narrow passage of 244 feet.

At the time of the visit of the committee of observation, so swift was the current through this aperture that it was impossible to ascertain the depth by the lead ordinarily used for sounding purposes, for it was drawn through the passage before reaching the bottom, and at one time the water had been above the towing-path, so inadequate was the space left to pass the water.

The Seneca river which, as before stated, is turned in above this crossing has been known to back up the water of the Cayuga as far as the village of Springport, 8 miles distant, since the construction of this work; this fact is known by the difference in color of the water in the two lakes. At this work the old piers are also left to block up the opening.

The effect of these obstructions has been to raise the water above the wharves and store-houses on the lake, thus destroying large amounts of property, rendering useless mill privileges, and flooding the low lands about the village of Ithaca, as far up as the main street of said village, filling the cellars and surrounding the houses, rendering useless large tracts of land, and what is far worse, endangering the lives and health of the inhabitants by the exhalations of the poisonous effluvia, always engendered by like causes.

While the State has been endeavoring to drain these low lands with one hand, with the other she has been filling in; thus not only rendering useless the projected benefits, but actually adding to the troubles originally endured by the people of this locality.

At this these people very justly feel aggrieved, and ask this Legislature to protect them from the State officials whose miscalculations have brought these evils upon them.

This claim is strengthened by the fact before stated that these lands are to be taxed to pay the expenses incurred in lowering the water of the lake and its tributaries.

It is well also to mention the fact that these people have not been here clamorous for damages, but that all they ask is that the State shall give them back a free passage for the water of the lake, that it may not set back on them.

The precedent already established, wherein the citizens of Canajoharie were allowed some fifty claims on account of damages resulting from the construction of the aqueduct at that place, admonishes us what may be the result in case the present plans are carried out in the construction of the works referred to in this report.

The fact that the State adds to the amount of water in these streams by the public works, has also been presented for the consideration of the committee.

Thus, via the Chemung canal, the waters of the Canisteo river are brought this way; and the enlarged Erie canal conveys a large volume of the waters of Lake Erie to swell the accumulation at these points; this fact is an additional consideration why the prayer of the petitioners should be granted.

There is one fact developed during the progress of this protracted examination which it may be well to mention. As the country is cleared up and the swamp lands drained and subjected to cultivation, the time required for heavy rains to find their way to the streams and lakes is very much shortened. Where, in former times, the low lands held back and distributed slowly their contents for weeks, a few hours now suffice to precipitate the falling water into their natural avenues of escape (this accounts for the conparative ruin of many of the best mill sites in the country, by reason of too much water at one time and too little at another). This fact is a reason why the avenues of egress should be *kept open* and *enlarged* instead of narrowing up and confining their escape.

It was also brought to the attention of the committee that the basis of calculation assumed by the engineers in the construction of this State work might have been the quantity of water passing a given point in a given length of time; this method of calculation may answer in rapid streams which may be fed by springs. But in this instance the basis should be the amount of country drained by this stream. And if a calculation is made, based on these grounds, the passages left are too insignificant to at all answer for the purposes for which they were designed, for it will be seen that the shed water of these lakes and river is scarcely exceeded by our largest streams.

Your committee, believing that the State does not desire to oppress any community or any locality, have unanimously agreed to report favorably to the prayer of the petitioners, and present for the consideration of the House the following bill.

1859. January 26, Assembly No. 40. Canal Commissioners Report.

The draining of the Cayuga marshes was authorized by act, chapter 178, Laws of 1853, and placed in charge of the canal commissioners. The Legislature appropriated for the work up to January 1, 1858, the sum of $175,000. And the amount expended for the same was $169,008.14. The main work at Jack's reefs is nearly completed. The dredging of the bars from that point to the New York Central bridge was put under contract in December, 1857. The plan proposed dredging channels through the bars 6 feet in depth below the water and 100 feet wide in hard material, and in some cases when the bottom was of a soft, yielding nature, 20 to 40 feet in width relying upon the current to enlarge the channel to the desired dimensions. No work was done under this contract until late this fall. A channel 30 feet in width has been dredged through the bar at Weedsport, and the amount expended for the year up to January 1, 1859, is $1,131. To carry out the objects of this improvement a further appropriation will become necessary. No estimates have yet been made or plans matured for the full completion of the work.

1860. January 13, Assembly No. 15. State Engineer's Report.

The work of "removing obstructions from Seneca river," from above Seneca river aqueduct to mouth of Canandaigua outlet, authorized by act, chapter 179, Laws of 1858, was put under contract October 9, 1858, and has progressed favorably during the

season. The old tow-path bridge at foot of Cayuga lake has been removed. About 30,000 cubic yards of the bar and deposit immediately above and below Seneca river aqueduct has been excavated, and there remains about 50,000 cubic yards to fully complete the entrance and discharge way to the aqueduct. A channel about 50 feet wide is excavated in the bed of the river for a distance of 23 chains below the aqueduct, and about 27 feet wide for 82 chains farther, and 50 feet wide thence (24 chains) to mouth of Canandaigua outlet. The total excavation done for this channel and the entrance and discharge way to the aqueduct is 72,800 cubic yards. The plan of work upon which the present estimates are based contemplates the removal of old towing-path bridges, the removal of bars at entrance and discharge way of aqueduct, and excavation of channel down Seneca river 150 feet wide from aqueduct to toll-bridge (about 45 chains), and 100 feet wide from toll-bridge to mouth of Canandaigua outlet (about 84 chains), and is now estimated to cost, exclusive of engineering and contingencies, $25,680, being an increase of $4,080 over the last annual estimate, providing a larger entrance and discharge way to the aqueduct, and a larger channel from aqueduct to toll-bridge. It is believed that this work will be completed, including contingencies and engineering, within the amount ($30,000) appropriated by the act authorizing the construction of the work.

1860. See, also, Law inserted after 1890 following.

1860. February 2, Assembly No. 51. Canal Commissioners' Report.

Draining Cayuga marshes. The main cut or principal channel at Jack's reefs was substantially completed 100 feet wide, and to a depth 6 feet below lowest water at the close of the year 1857, and the excavation of bars between that point and the bridge of the New York Central railroad, direct line, on the Cayuga marshes, was put under contract to L. L. Lowell, in December of that year, at an estimated cost upon the plan then contemplated of $17,398.60. This plan provides for excavating channels of various widths and depths through the bars, numbered 1 to 10 consecutively, from Jack's reefs to railroad bridge, as follows: Bars Nos. 1, 2, 3, 4, 6 and 8 to be 20 feet wide on bottom; slopes 2 to 1, and bar 10 feet low water. Bar No. 5, Hickory island, to be 40 feet wide on bottom; slopes 2 to 1, and bar 10 feet low water. Bar No. 7, Mosquito point, to be 60 feet wide on bottom; slopes

[illegible] the mouth of the river. [illegible] additional channel to the [illegible] at Lafayette street [illegible] and [illegible] the river. Bars Nos. 1 and 2 were ordered [illegible] to be 60 feet wide at bottom, slopes 1 to 1, and [illegible] below old low-water mark. [illegible] was completed at the cost [illegible] and the [illegible] to [illegible]. The [illegible] opposite Lafayette street [illegible] 100 feet wide and 12 feet deep below old low-water mark. The [illegible] Bluff, [illegible] 2,200 feet of new channel 60 feet wide and 12 feet deep below old low-water mark excavated, leaving about 1,400 feet in length of low excavation. At the [illegible] point a channel averaging 110 feet wide by 2 feet deep below old low-water mark, and 1,200 feet in length is excavated from bridge above to head of bar. There remains about 1,000 feet in length below bridge to complete. These comprise all the work as yet done under this contract. The estimated cost of completing the work in contract plan for bars unexcluded and some dimensions as submitted have as now made is $35,000. An expenditure of $30,000 to $32,000 will complete the bars at and below Memphis point, affording a large outlet and increased fall for the local waters for the maritime and tributary cities. The balance, $25,000 to $27,000, is required for a narrow cut, 20 feet bottom, and base 7 feet below low water, through the long bars Nos. 9 and 10, adjoining railroad bridge. It seems extremely doubtful whether this narrow channel will secure essentially the benefit that should be derived from the large expenditures made for the removal of the obstructions below. It can carry but a small portion of the natural flow of the stream; the balance must be passed over the surface of the bar, elevated 6 to 6½ feet above base of channel through Memphis point. The commissioner is of opinion that a larger channel across all the remaining bars should be provided as follows: Bars Nos. 1, 2, 3, 4 and 5, 60 feet, width of bottom 20 feet below old low-water mark. Bars Nos. 9 and 10, 60 feet, width of bottom 8 feet below old low-water mark. The following table exhibits the quantity and cost of improvement embraced in this contract upon the several plans referred to above. The sizes in the tables refer to width at bottom with slopes 1 to 1 and depth below old low-water mark, as established by Gen. Geddes in his original profiles:

UPON PLAN OF CONTRACT.

NUMBER OF BAR OR ITEM OF WORK.	Size of cut.	Cubic yards of excavation.	Price.	Amounts.
Skaneateles outlet No. 1.....	20 x 10	800	$0 26	$208 00
Bonta's bridge No. 2	20 x 10	3,000	26	780 00
Above Barton's No. 3.....	20 x 10	1,200	26	312 00
Weedsport No. 4.	20 x 10	900	26	234 00
Hickory island No. 5	40 x 10	10,500	20	2,100 00
At bridge No. 6.....	20 x 10	1,000	26	260 00
Mosquito point No. 7	60 x 10	33,000	15	4,950 00
Howland's bridge No. 8.....	20 x 10	1,000	26	260 00
Campbell's island No. 9.....	20 x 7	4,400	26	1,144 00
Railroad bridge No. 10	20 x 7	25,500	26	6,630 00
Totals				$16,878 00
Add ten per cent for contingencies.....				1,687 80
				$18,565 80
Deduct amount done				12,045 00
Balance to complete				$6,520 80

UPON PLAN AS INCREASED IN COURSE OF CONSTRUCTION.

NUMBER OF BAR OR ITEM OF WORK.	Size of cut.	Cubic yards of excavation.	Price.	Amounts.
Skaneateles outlet No. 1.....	20 x 10	1,000	$0 26	$280 00
Bonta's bridge No. 2	20 x 10	3,000	26	280 00
Above Barton's No. 3.....	20 x 10	1,000	26	260 00
Weedsport No. 4	40 x 12	10,000	26	2,600 00
Hickory island No. 5	20 x 10	50,000	20	10,000 00
At bridge No. 6	20 x 10	1,500	26	390 00
Mosquito point No. 7.....	100 x 10	38,000	15	5,700 00
Howland's bridge No. 8	20 x 10	1,000	26	260 00
Campbell's island No. 9.....	20 x 10	12,000	26	1,920 00
Railroad bridge No. 10	20 x 9	70,000	26	18,200 00
Total				$40,370 00
Add ten per cent for contingencies.....				4,037 00
				$44,407 00
Deduct amount done				12,045 00
Balance to complete				$32,362 00

UPON PLAN AS RECOMMENDED IN PRESENT REPORT.

NUMBER OF DAM OR ITEM OF WORK.	Size of sill.	Cubic yards of masonry.	Price.	Amount.
Skaneateles outlet No. 1	60 x 10	2,500	$0 25	$625 00
Boutt's bridge No. 2	60 x 10	8,000	25	2,000 00
Above Burton's No. 3	60 x 10	3,500	25	875 00
Weedsport No. 4	60 x 12	12,000	25	3,120 00
Hickory island No. 5	60 x 13	50,000	20	10,000 00
At bridge No. 6	60 x 10	5,000	25	1,300 00
Mosquito point No. 7	100 x 10	40,000	15	6,000 00
Howland's bridge No. 8	60 x 10	3,000	25	780 00
Cauzboll's island No. 9	60 x 8	16,500	25	4,290 00
Railroad bridge No. 10	60 x 8	95,000	25	24,700 00
Totals				$53,839 00
Add ten per cent for contingencies				5,383 00
				$59,221 00
Deduct amount done				12,045 00
Balance to complete				$47,168 00

1860. February 27, Assembly No. 97. Report of committee on draining Cayuga marshes.

Mr. Servis, from the committee to which was referred the petition relative to the completion of the drainage of the Cayuga marshes would respectfully report:

That a number of petitions, numerously signed by citizens of that portion of the State most affected by the evils sought to be remedied, have come to the hands of your committee. The petitioners represent that there are about 30,000 acres of marsh and swamp lands now overflowed by the Seneca river; that a portion of said lands are thus overflowed in consequence of the construction of the high embankments of the Erie canal across said marshes; that the Erie canal from Buffalo to Montezuma is supplied with water from Lake Erie and from feeders between Buffalo and Montezuma; that the lockage is down to Montezuma between those places, and is also downward from Jordan to Montezuma, and that a very large proportion of the surplus waters of the canal between Buffalo and Jordan are discharged into the Seneca river at Montezuma, thereby greatly increasing the amount of water from that

naturally flowing in that river. That said lands are, in their present condition, of but little, if any, value, and are a source of contagion and disease to the surrounding country in consequence of the waters of the Seneca river rising above its banks and overflowing them, and that if drained they would prove to be rich and valuable as any lands within the limits of the State. That they believe that the lands aforesaid can be reclaimed so as to render them capable of cultivation and exceedingly productive by completing the removal of the bars in the river between Cayuga lake and Jack's reefs; therefore, they respectfully pray that your honorable body will make such appropriations as will complete the work now so nearly finished.

Extracts from 1858, Assembly documents Nos. 20 and 46, preceding, with the additional statement that 1,800 to 2,000 acres of land have been drained by the works already finished, and a recommendation of a bill.

1860. March 2, Assembly No. 101. Report of State Engineer on draining Cayuga marshes:

The following resolution of the Assembly has been received:

Resolved, That the State Engineer and Surveyor is hereby requested to report to this house, at the earliest period practicable, what amount, in his judgment, is necessary to complete the draining of the Cayuga marshes, and whether he deems such work necessary or practicable.

In answer to which the State Engineer and Surveyor begs leave respectfully to submit the following report:

This work was contracted to L. L. Lowell in December, 1857, and embraced or specified the following work, viz.: The excavation of channels through bars Nos. 1 to 10, inclusive, of various widths of bottom, with side slopes of 2 to 1, and depth below low-water mark as follows: See No. 51, preceding. Under this contract the following work has been done: See same.

The work done thus far is very materially enlarged from that specified in the contract. In making up an estimate of the cost to complete the work properly embraced in this contract, the bars Nos. 5 and 7 are based upon depths of 10 feet below low-water mark, and same widths as now commenced. Bar No. 9 is computed at 20 feet bottom and 10 feet below low water; and bar No. 10 to be 20 feet bottom and 10 feet below low water at the foot, and rising on a regular grade to 8 feet below low-water mark at

the head or railroad bridge, and the remaining bars as specified in the contract. The estimated cost of completing, upon this plan, is $30,000. The work of draining the Cayuga marshes has been under the sole charge of the canal commissioners since 1852, and the estimates and quantities herewith submitted are based upon information and data obtained from their reports.

The cut through Jack's reefs was completed in 1857 at a cost of about $165,000. This depressed the surface of the water at Cross lake, 1 mile above, about 4 feet. 1858. No. 20. And the plan then adopted for continuing the work was designed to carry up this depression to the foot of the marshes by excavating channels of suitable dimensions for the ordinary flow through the intervening bars, and above this point (Mosquito point) to the railroad bridge, to excavate a narrow channel of 20 feet width.

It was believed that when this work was executed, a short experience would determine the proper dimensions of the channels through the bars between Mosquito point and the railroad bridge; and the increased velocity in the narrow channel, due to the greater declivity obtained below, would very materially economize in excavating or enlarging these channels to the required dimensions.

For the purpose of this estimate, a channel of 60 feet bottom through bars Nos. 8, 9 and 10, with slopes of 1 to 1 and a depth of 10 feet for bars 8 and 9, and an average depth of 9 feet below low-water mark for No. 10, is assumed, in the judgment of the undersigned, as the maximum channel which will be required to obtain the largest benefits, proportioned to the expenditure sought for in this improvement. Some of the smaller bars below Mosquito point may require a larger channel, and an allowance is made for this contingency. The increase of excavation over the amount estimated, as included in Lowell's contract, is computed at 50,000 cubic yards, and estimated to cost $6,000. The aggregate cost for completion is: For work included in Lowell's contract, $30,000; for work not included in Lowell's contract, $6,000; add for contingencies, $4,000; total, $40,000.

As to the practicability of successfully draining most of the wet lands bordering on the Seneca river there can be no reasonable doubt since the effect of the work at Jack's reefs has been seen; and that the work is so nearly completed that it would seem no longer a question as to the propriety of expending the sum

required to finish it. The completion of this work will remove all just causes of complaint that might grow out of the embankment of the enlarged Erie canal retarding the flow of water over the marshes; and it is judged important that Mr. Lowell's contract should be at once completed that the cuts he is to make below the railroad bridge may be connected with those now in progress above the railroad bridge, under an act passed by the Legislature and extending to the canal.

VAN R. RICHMOND, S. E. & S.

1861. February 6, Assembly No. 57. Canal Commissioner's Report.

The appropriation for removing obstructions from the Seneca river is exhausted, except $3,500. Observations have been made by resident engineer M. S. Kimball, to ascertain the effect this improvement is to have to reduce and keep down the water at the old surface, and prevent the overflow of lands above the canal. He reports as follows:

The old towing-path bridges are moved, and passageways cleared at the aqueduct. A channel 150 feet wide for 2,500 feet down is cut. A large portion 60, and the balance 30 feet wide is dug below the Canandaigua outlet. A 60-foot channel for five-sixths the distance, and 30 feet for the remainder, has been cut through the bar between the outlet and the railroad bridge, on the work added by the board of canal commissioners in December of last year. Levels show still a considerable fall in the Canandaigua between the two sides of the canal. In my judgment nothing short of a channel 150 feet wide to the outlet, and 100 feet from that to the railroad bridge, put down to the aqueduct floor at the upper end, and brought to the marsh work now in progress below will do. The Canandaigua is a very deep stream, and requires a wide and deep outlet to compensate for cutting it off. The total estimated cost of this work on the plan now recommended, is $55,320. Deduct former appropriations, $30,000. Required to complete, $25,320.

DRAINING THE CAYUGA MARSHES.

A full description of this improvement, together with tabular statements of quantities, cost of different plans, etc., are given in the report for last year. The plan of the work then recommended was estimated to cost for the work remaining to be done $47,168;

about $10,000 remained of former appropriations. The Legislature at its last session made a further appropriation for this object of $30,000, with a provision in the law that no moneys should be paid until the improvement is completed or progressed far enough to show its beneficial effects. No funds can be realized from this appropriation. I would respectfully recommend that an appropriation of $35,000 be made to complete this improvement. The bars below Mosquito point remain in the same condition as described in my last report. About 55,000 cubic yards have been excavated at Mosquito point, and the bars above, upon which has been paid $20,208, and drafts given amounting to $4,110 in excess of funds available. The results thus far attained in this improvement in its still incomplete state, is the drainage of a considerable quantity of wet lands (estimated at 3,000 A.), bordering on the Seneca river between Jack's reefs and Mosquito point, and a very material benefit to lands lying above Mosquito point from the more rapid subsidence of freshets. The large and main body of lands sought to be reclaimed by this work lies above Mosquito point and the benefits intended to be derived from the expenditure made at Jack's reefs can never be fully realized until a channel shall have been made through all the bars.

Table showing work done. See last report for amounts to be done. Bars 1, 2, 3, 6, 8, not done. Bar 4, 9,500 yards, $2,470 done; 3,500 yards, $650 remaining. Bar No. 5, 2,800 feet long, 38,280 yards, $7,656 done; 11,720 yards, $2,304 remaining. Bar No. 7, 800 of 40 x 10 and 1,500 feet of 100 x 10, 26,100 yards, $3,915 done; 13,900 yards, $2,085 remaining. Bar No. 9, 45 x 9 cut made, 13,600 yards, $3,536; 2,900 yards, $754 remains. Bar No. 10, 2,400 of 60 x 8 and 1,000 of 30 x 8, 33,800 yards, $8,788 done; 61,200 yards $15,912 remaining.

Cayuga inlet. In consequence of the improvements of the outlet of Cayuga lake, allowing a more free discharge of water from the lake, it is found that in the dry season of the year the water in the inlet is so low that it is impossible to load boats to near their full capacity without conveying a portion of the loading to the boats after reaching the lake. In order to give Ithaca the benefit in all seasons of 7 feet depth of water, which will be had on the Cayuga and Seneca and Erie canals, the bottom of the inlet must be lowered about 2 feet.

1861. January 23, Assembly No. 23. Old tow-path bridges and obstructions of old dams, etc., removed, at aqueduct. Seventy-four thousand four hundred cubic yards excavated for perfect entrance and discharge. From aqueduct down to toll-bridge (45 chains) 44,400 cubic yards, channel 150 feet wide for 38 chains; remains to complete 20,200 yards. From toll-bridge to mouth of Canandaigua outlet (75 chains) 25,600 yards, channel 60 feet wide mostly, remainder 30 feet; remains to complete 100 feet wide, 57,000 yards. Late in December the canal commissioners authorized the extension from outlet to railroad bridge, 97 chains, channel 60 feet wide five-sixths of distance and 30 feet for remainder, dug at cost of $7,163. Additional appropriation needed consequently, $6,536.

1862. Chapter 436 of Laws. Provides for drainage of lands in Ithaca at expense of owners.

1862. Chapter 465 of Laws. Strikes out of section 1 of act of April 13, 1858, lines 13 and 14, the words "without obstruction or impediment and." Amends section 2 to read "The sum of $25,000 is hereby appropriated in addition to the money already expended upon said work for the completion of the same; but no part of said $25,000 shall be expended by said canal commissioners except upon a contract that will insure the entire completion of said work within said additional appropriation.

1862. January 8, Senate No. 26. Canal Commissioners' Report. Removing obstructions from Seneca river. Balance unexpended at date of last report, $3,500, has been expended between toll-bridge and mouth of Canandaigua. The present condition of the work may be briefly stated as follows: The old towing-path, bridge abutments, etc., are removed from the river channel; a new cut, 150 feet in width, has been made south of the canal to convey the waters of the Canandaigua into the Seneca river. The entrance and discharge way of the aqueduct has been sufficiently enlarged. A channel 150 feet wide and of sufficient depth has been completed for most of the distance between the aqueduct and the toll-bridge; and a channel 100 feet wide has been completed for a larger portion of the distance between the toll-bridge and the mouth of the Canandaigua outlet or end of the original contract and plan of work. The amount required to complete the work on the original plan is about 30,000 cubic yards of excavation and is estimated to

cost $4,500. In December, 1859, and during the progress of this work, the board of canal commissioners authorized the extension of the contract and work from the mouth of the Canandaigua down to the railroad bridge, a distance of 97 chains. During the summer of 1860, one channel 30 feet in width, was excavated for the entire distance and an additional cut made of the same width for about $\frac{2}{3}$ of the same distance. The total amount expended on this portion is $7,163. The resident engineer, in his report to the canal commissioners as shown last year, took the view that the object of authorizing the work below the outlet of the Canandaigua was to complete a channel from the junction of the Canandaigua above the aqueduct to the marsh-work below (commencing at the railroad bridge and running down, known as the work of draining the Cayuga marshes), and make the whole available and not to leave a hiatus on the short distance between the outlet and railroad bridge. He reported, accordingly, as follows: In my judgment, nothing short of a channel 150 feet wide to the outlet (Canandaigua) and 100 feet from that to the railroad bridge put down to the aqueduct floor at the upper end and brought to the marsh-work now (then) in progress below, will do. If this work was added, by the canal commissioners having in view this improvement, as the engineer supposes, then it will require a farther appropriation of $25,320 to complete the whole and make it available on that plan. (See law preceding.)

Draining the Cayuga marshes. Chapter 178, 1853, authorized work. Appropriated, $175,000, up to 1858. Expended, $169,008.14. Remaining, $5,991.86. At the close of 1857 the main cut or principal channel at Jack's reefs was substantially completed, 100 feet wide and 6 feet below lowest water, and the excavation of the bars between that point and the New York Central railroad bridge (direct line) on the Cayuga marshes was put under contract to L. L. Lowell, in December of that year, at an estimated cost on the plan then contemplated of $17,398.06. Various changes were made in the plan of the work during its progress in the years 1858 and 1859, very largely increasing the cost. The table (given in 1850, Assembly No. 51), shows the amounts on the different plans. The table in 1861, Assembly No. 57, shows the amounts done very nearly, the total remaining to be done being now 118,415 yards, $28,592.14. There has been appropriated by the Legislature and expended on construction for this work up to September 30, 1861,

about $197,000. To complete the same upon the enlarged effective plan adopted in 1860 will require a further appropriation of $35,000. The undersigned is not sufficiently acquainted with the details either of the general plan of work or of the methods by which the greatest benefits in the reclaiming of lands or of sanitary improvements can be attained to justify him in urging any special action at this time by the Legislature. The work is nearly completed, and but little benefit comparatively can accrue until the cuts are entirely done. It would seem sound policy to appropriate the proportionately small balance required for finishing the improvement and realize in some measure the benefits from the large expenditure already made.

1862. January 13, Senate No. 35. State Engineer's Report:

The work of "removing obstructions from the Seneca river" has progressed to the extent of the appropriation and is now stopped. The portion of this work originally contemplated and estimated for by the engineers embraced the removal of old towing-path bridges, etc., from the river channel, and the excavation of a channel south of the canal between Canandaigua outlet and Seneca river and enlargement of Seneca river north and down to mouth of Canandaigua of sufficient dimensions to carry off the waters of Canandaigua outlet, which were cut off by the construction of the enlarged canal across its bed. It was in effect making a new channel for the Canandaigua outlet, turning it under the canal by way of the Seneca river aqueduct. This was considered to be all that was required in connection with the enlargement of the canal, and the estimated cost was $25,000. Some parties interested in the low lands upon these streams, who were fearful that the same would not be properly carried out procured the passage of an imperative law requiring the work to be done by the canal commissioners, and appropriated $30,000 to complete it. After a large portion of the work was completed the board of canal commissioners extended the contract from mouth of Canandaigua to railroad bridge, and about 55,300 cubic yards excavated upon this new portion since that time. The appropriation is now exhausted and the work is in an uncompleted state. About 30,000 yards remain to be done between the aqueduct and the mouth of the Canandaigua to complete as per original plan, and is estimated to cost $4,500.

VAN R. RICHMOND.

1863. January 23, Senate No. 50. State Engineer's Report.

Progress of the canals in 1829. Canal across Cayuga marshes was deepened, caused by improvement in Seneca river at Jack's reefs.

David Thomas was designated by law to superintend the improvement of Seneca river for draining the Cayuga marshes. The channel at Jack's reefs was stated by commissioners to have lowered Cross lake 5 feet ; at Mosquito point 4 feet, at Bluff point 3 feet, and at Montezuma 2 feet. Whole expenditure for this purpose, $98,371.

1840 and 1841. Montezuma aqueduct decided on.

1851. Geddes' report given in full without maps.

1860. Cubic feet per minute discharged into Seneca river from Lake Erie, 3,700.

1862. Description with dimensions of Richmond aqueduct, with map showing old and new locations of canal.

1863. January 16, Senate No. 7. Canal Commissioner's Report.

Removing obstructions from the Seneca river and draining the Cayuga marshes. By chapter 465 of the Laws of 1862, the law of 1858 was amended by appropriating the sum of $25,000 to remove obstructions at the mouth of Cayuga lake, and in the channel of Seneca river, but coupled with the condition that no part of this sum should be expended except on a contract that will insure the entire completion of said work within said additional appropriation. The commissioner in charge of the middle division, under whose supervision this work came, considered it necessary to a proper understanding of his duties under these provisions, to make a personal examination of the obstruction to the natural flow of the waters of the Seneca river by the enlarged canal, and has continued this examination down the river to Cross lake and has caused a survey to be made and levels of the river taken under the direction of M. S. Kimball, engineer, all the way from Cayuga lake to Baldwinsville. A map and profile of the river, giving the results of these examinations, have also been completed. In addition to the surveys thus made, the undersigned has consulted the necessary maps and documents to form an opinion in regard to the whole subject of removing the obstructions caused by the State, and of draining the marsh lands along the river. He feels it due to the subject that a condensed statement of the whole matter should be made to the Legislature, that any future action

may be based on a proper knowledge of what is necessary to protect the State from claims for damages for overflowing lands, and to enable it to assess a proper portion of the expenses heretofore incurred in removing bars and obstructions from the river at Jack's reefs and other places. The enlarged canal crosses the Cayuga marshes at Montezuma, on an embankment that averages about 12 feet high, and is 15,000 feet long. A description of the locality published in the Canal Commissioner's Report in 1858, is as follows: (Extract therefrom.)

The completion of the embankment for the canal closed this 15,000 feet of water-way, and forced all the water into the east channel and under the aqueduct, and greatly lessened, for all time to come, the space through which the waters of the river must flow. It is manifest that the construction of the enlarged canal across these marshes has materially obstructed the natural flow of the water. In the report before referred to, it is stated that the whole marsh descends from Cayuga lake, northward to and beyond the direct railroad bridge at the rate of 5 inches to the mile. Though these marshes are thickly covered with flags and other aquatic plants, yet a declivity in the direction of the flow of the water of 5 inches to the mile must have allowed a vast quantity to pass when it was from 2 to 3 feet deep for the whole width of the marsh, which is not less than 15,000 feet wide. Whatever may be done in deepening and improving the channel of the river, it is not to be lost sight of that this embankment is at all times of high water, a dam, when it overflows the banks of the river. These facts were probably well understood when the plan of crossing the marshes by an embankment was adopted, for levels were taken along the river to below Jack's reefs to determine what additional declivity might be given to the stream to increase the rapidity of its flow, and thus compensate for contracting its width and depth at Montezuma. In the report before referred to the engineer then in charge of the work makes the following remarks: (Jack's reefs improvement made aqueduct practicable.) The whole declivity of the river before any work was done at Jack's reefs, was from Montezuma to Jack's reefs head but 3.30 feet at low water. The same engineer in his report for 1856, says that Jack's reefs is in fact the lower end of Cayuga lake in high water. On the 25th day of April, 1855, the whole fall from Cayuga bridge to Jack's reefs was but 2.99 feet, the distance being 28 miles, giving a

declivity of less than 0.11 feet a mile. This was before the embankment for the enlarged canal was made and when no very extraordinary freshet was running in the river.

In 1857, as appears in the commissioners' report for 1858, the quantity of water running in the great freshet of November fifteen, was 15,269 cubic feet a second, which was fifty per cent more than had been observed at any time previous, of which we have any record. And it is stated on the same page that all previous calculations had been based on 10,000 cubic feet a second as the maximum flow of the river. The same report says that this vast quantity of water did not raise the level of Cross lake to old high-water mark by 1.32 feet. This proved the value of the work done in cutting down Jack's reefs, and at this very time so much of the embankment of the enlarged canal had not been made as to allow 15,000 feet of waterway over the bank of the old canal for the free passage of the freshet; and at this time the water stood 2.16 feet against the sides of the aqueduct at Montezuma.

It is fortunate for the State that the embankment was not then finished so as to make a dam across the marshes; and it is also fortunate that the work at Jack's reefs was then completed, so as to give 4 feet additional declivity to the river, thus enabling the water to pass away by a rapid flow. In 1849 (before the work was done at Jack's reefs) the canal engineers at Montezuma made observations in regard to the rate of subsidence of freshets. The reported result of the greatest subsidence was at the rate of about $1\frac{1}{4}$ inches per day. In 1857 this great freshet subsided at the rate of 0.625 or about 8 inches a day and in 16 days it equaled $4\frac{1}{4}$ feet, while in 1849 the rate of fall would not give more than $1\frac{1}{4}$ feet.

The obligation resting on the State to save harmless the owners of lands above the aqueduct, appears to have been conceded, and in 1858, a law was passed directing the commissioners to dredge a channel in the river for a sufficient distance above and below the aqueduct constructed for the purpose of carrying the Erie canal over the Seneca, Canandaigua and Clyde rivers, so as to allow the waters of these rivers at all times to pass off without obstruction or impediment and as readily and freely as they would naturally do if no improvements for the purposes of the canals were made, and the expense shall be paid out of any money appropriated to the enlargement of the Erie canal. The work of draining the

marshes under chapter 178, of the Laws of 1853, was prosecuted under the direction of the Hon. Henry Fitzhugh, canal commissioner, and George Geddes, engineer, until the close of 1857, at which time Mr. Fitzhugh's term of office expired and Mr. Geddes resigned in the following words: The amount of work remaining to be done does not require the engineering force that has heretofore been necessary, and having full confidence in the ability of the assistant engineer, Mr. Mason Loomis, to execute the work to your entire satisfaction, I hereby offer my resignation. Mr. Loomis was soon after relieved from further connection with the work and it was placed under the direction of another engineer; and since that time it has been prosecuted quite at variance with the plan that had been adopted by Messrs. Fitzhugh and Geddes.

The water was let through the cut at Jack's reefs January 21, 1857. In two weeks the water was reduced 4 feet in Cross lake, 2 feet 10 inches at the bridge at Mosquito point, and about the same at the direct railroad bridge. This proved the beneficial character of the work and the soundness of the plan adopted originally; and the report goes on to say: When Mosquito point bar and the other bars in the river are removed up to the long bar over which the direct railroad passes and the 4 feet that we have reduced the surface is brought up to Hard point bar, the discharge will be freer than it is now and the freshets will subside more rapidly. The present declivity in low water of the river from Montezuma to Hard point may be put at 3 inches to the mile. When the bars below are removed it will be 1 foot to the mile.

It would appear from this statement of the facts that the simple mode of operations which was then demanded was to commence with the first bar above Jack's reefs and remove it, and then to take the next, and so on, until the work of draining the marshes met the work then in progress below the canal at Montezuma. Had this course been adopted, all the work done for reclaiming the marsh lands would have aided and materially lessened the cost of protecting the lands above the canal from the injurious effects of the embankment. In fact, it would have been doing just what true economy demanded to accomplish both and each of the objects aimed at, viz., draining the marshes and guarding against injuries that grow out of construction of the enlarged canal; and this plan must now, or some time hereafter, be adopted,

or neither of the ends will be attained. When the surface of the river from Montezuma to Hard point, which is below the direct railroad and is more than 5 miles distant from Montezuma, shall have a declivity of 1 foot to the mile, the water will run with such rapidity that a comparatively small channel will carry it, and the velocity will be sufficient to keep the channel open. For a full statement of the effect on the river of the work done at Jack's reefs, reference is made to the accompanying report of M. S. Kimball, engineer, under whose direction a full survey has been made during the last season; and attention is likewise called to his statement of the manner in which the work has been done on the various bars above Jack's reefs and above the railroad bridge below the aqueduct, and the effect thereof. Mr. Kimball has made estimates for completing the work on a plan of cuts 60 feet wide, and on a plan of cuts 40 feet wide. For the particulars of these estimates his report is referred to. It is respectfully recommended that the appropriation of last session be increased from $25,000 to $30,000, and that the restrictions in the act of last winter as to security be repealed. With such an appropriation the undersigned would feel at liberty to make cuts 40 feet wide through all the bars, the effect of which being observed would determine the necessity of widening the cuts to 60 feet, or prove that 40 feet would be sufficient to accomplish the objects aimed at in the law of last winter. It is believed that cuts 40 feet wide will protect the State from future injuries from the embankment of the enlarged canal; but it may be a question whether to accomplish the work of draining the marshes will not require cuts 60 feet wide. Claims to a heavy amount are already being made for timber destroyed by the raising of water at Montezuma, and these claims are likely to increase. Thus, it is manifest that the interests of the State call for the completion of the work at the earliest practicable period.

Experience shows that it is always unwise for the State to inflict injuries on the property of its citizens where it can be avoided at any reasonable cost, for it is certain to be paid for sooner or later at rates never less than the real value of the property injured or destroyed, and frequently at a great deal more.

The large sum expended by the State for the purpose of draining the marshes under chapter 178, Laws of 1853, can none of it be

assessed on the owners of the marsh and swamp lands unless this work is carried to its completion substantially on the plan originally proposed. In conclusion, the undersigned begs leave to state as the result of a fair and careful examination of the whole project, and of the relation of the canal to these rivers and to Cayuga lake, that his convictions are clear that the plan of draining these marsh lands and removing these obstructions was wise and necessary in its inception, and would have produced all the beneficial effects claimed, if the money already provided had been judiciously expended and the additional appropriations necessary had not been withheld.

WILLIAM W. WRIGHT,
Canal Commissioner.

Report of M. S. Kimball. In obedience to your instructions I have made an estimate, first, of the cost to finish the contract known as the contract for removing obstructions from Seneca river, and of the contract for the draining of the Cayuga marshes; second, a survey map and profile of the present condition of the whole improvement, together with an estimate of the cost to prosecute and complete the work on the basis of the law, chapter 465, of last winter, which is as follows: "An act to amend an act entitled 'An act for the removal of obstructions from the outlet of Cayuga lake and the channel of Cayuga river,'" which act appropriates $25,000 therefor.

I am to presume that this law contemplates the improvement of the river to such an extent as to compensate for the embankment across the marshes at Montezuma, and the cutting off the Clyde river and turning it into the Seneca above the aqueduct, and no farther. A description of the river and the condition of the work heretofore done, is as follows:

The river had originally a fall in low water from the surface of Cayuga lake to the pond at Baldwinsville, a distance of 38 miles, of 12.64 feet. Upon that portion between the canal at Montezuma (6 miles below the lake) and the pond at Baldwinsville, 32 miles, there was 10.05 feet fall. Upon the completion of the channel at Jack's reefs, 9 miles above Baldwinsville, in 1857, the water was permanently lowered at Cross lake (a small lake lying above and about midway to the first bar) 4.01 feet, and at

Mosquito point, about one-half way to Montezuma, 1.54 feet; at the Central, straight line, railroad bridge, .46 feet; and at Montezuma, .03 feet. Hon. George Geddes, with whose levels I now compare my work, and who reported in 1852 that the cutting out of Jack's reefs would lower Cross lake 4 feet, has been most admirably sustained in the result, as it has been permanently lowered 4 feet and over. His plan was also to cut through the remaining bars above, ten in number, except at Hickory island, bar No. 5, 40 feet, and Mosquito point, bar No. 7, 60 and 140 feet. This plan however was increased during the progress of the work, making the Weedsport bar, No. 4, 60 and the Mosquito, No. 7, 100 feet, and finally in 1859 the plan of making none less than 60 feet was adopted. The work as now done and left is substantially as follows:

Bar No. 1 (Skaneateles outlet), 600 feet long, 60 feet wide, by 10 feet deep; nothing done; is probably soft material.

Bar No. 2 (Bonta's bridge), 1,700 feet by 60 x 10 is doubtless hard; nothing done.

Bar No. 3 (above Bonta's), 500 x 60 x 10; soft; nothing done.

Bar No. 4 (Weedsport bridge), 800 x 60 x 12; soft; has a completed channel, but has been dug 2 feet extra depth.

Bar No. 5 (Hickory island), soft; has a channel dug 2,100 x 60 x 13, which is 3 feet extra depth, and 3,200 x 60 x 13 remaining.

Bar No. 6 (new bridge), is supposed to be soft; 1,300 x 60 x 10; nothing done.

Bar No. 7 (Mosquito point), is of cemented clay and gravel; very hard, and has been dug 1,300 x 100 x 10 feet and 800 x 30 x 10; there remains 100 x 100 x 10 and 70 x 30 x 10.

Bar No. 8 (Howland's bridge), probably hard; 400 x 60 x 10; nothing done.

Bar No. 9 (Campbell's island), dug 1,900 x 45 x 9 feet, leaving 1,900 x 15 x 9; balance of bar, 200 feet, partly done; ¼ very hard; ¾ soft.

Bar No. 10 (railroad bridge), dug 2,100 feet and ½ the width, or 30 feet, 8 feet deep, and the other half 30 feet, 5½ feet deep to the "deep hole," and from the deep hole to Campbell's island, 1,700 x 30 x 8; the remaining 30 feet not done, and the balance 5,900 x 60 x 8 untouched and soft.

The above is all the work on the contract known as draining the Cayuga marshes.

The condition of the balance of the contract known as for the removal of obstructions from the Seneca river, is as follows:

From railroad bridge to the mouth of the Canandaigua 5,300 x 50 x 6½ and 1,100 x 30 x 6½; soft.

From Canandaigua to toll-bridge 5,600 feet, the larger portion 80 and the balance 60 feet wide by 8 feet deep; soft.

From toll-bridge to Montezuma aqueduct 3,300 feet, 150 x 7½; soft; also all excavations about and above the aqueduct done.

The question now is what is the State required to do to compensate for the construction of the enlarged canal across the marshes and shutting off and turning the Clyde river into the Seneca above the aqueduct, or in other words, how wide must cuts be made continuous through the several bars to accomplish this object alone.

By reference to table A it will be seen that the levels of October 11, 1851, taken by Mr. Geddes before the work at Jack's reefs was done makes the surface of Cross lake 5.84 feet below Cayuga lake and the levels of August 25, 1862, with Jack's reefs completed makes it 9.85 feet below, or a lowering of Cross lake of 4.01 feet, which exceeds a little the original calculation of Mr. Geddes. This, in my judgment, should inspire the public with confidence in the results Mr. Geddes proposed to attain at all other points above.

Originally, in 1852, estimates were made for cuts 200 feet wide from Cross lake to the mouth of the Canandaigua, but of 2 feet less depth than those finally adopted and on which the work has been lately progressing. It was then proposed to not only reduce the surface 4 feet at Cross lake but 4 feet at Mosquito point and 3 feet at the foot of Kipp's island, which for all practical purposes may also be called the same at the railroad bridge. This result produced at the straight line railroad bridge only 3 miles below the point in question (Montezuma), it must be evident to all reflecting minds that it would not only have attained the object sought but much more. The plan as finally adopted and on which the work has been proceeding was 60 feet wide but of 2 feet greater depth, which is not so great a percentage of water less as may at first appear. Let it be borne in mind that the object to be accomplished upon the plan of the 60 feet cuts and on the plan lately in progress was to drain the Cayuga marshes, while the object now is to only compensate for the obstructions by the

State at Montezuma. For this purpose then, and it alone, I recommend the adoption of a 40-feet continuous cut through all the bars as likely to be competent to produce the result. Upon this I present the following estimate, marked B, amounting to $30,000. For the purpose, however, of reclaiming the marshes, aside from the obligations resting on the State growing out of the enlargement of the canal on street cuts to 60 feet or possibly more, to enable the State to assess the money heretofore expended for redeeming them, but I would recommend a trial of the 40-feet cuts first and see the effect.

XXX "A."

Levels of Seneca river from Montezuma to Cross lake October, 1851, and August, 1862.

	Levels. Oct. 11, 1851.	Levels. Aug. 25, 1862.
River at Montezuma aqueduct below surface Cayuga lake	2.59	2.62
River at toll-bridge	.....	2.82
River opposite mouth of Clyde river	2.82	3.23
River at railroad bridge, direct line	3.52	3.98
River at Hard point	3.99	4.64
River at head Campbell's reef	4.16	5.18
River at foot Campbell's reef	4.34	5.47
River at head Howland's bridge reef	4.34	5.47
River at foot Howland's bridge reef	4.42	5.75
River at lower end of Maple island	4.44	5.75
River at head of Mosquito point reef	4.52	6.06
River at foot of Mosquito point reef	4.99	6.64
River at head of Hickory island reef	4.99	6.67
River at foot of Hickory island reef	5.40	7.40
River at head of bar No. 3	5.52	7.42
River at foot of bar No. 3	.....	7.58
River at head of bar No. 2	.....	7.58
River at foot of bar No. 2	5.74	9.28
River at head of bar No. 1	.....	9.28
River at foot of bar No. 1	5.80	9.81
Surface of Cross lake	5.84	9.85

"B."

Estimated cost at contract prices of a channel forty feet wide through all the bars from Jack's reefs to Montezuma; also to complete on plan as increased in course of construction.

LOCATION OF BAR.	AS INCREASED IN COURSE OF CONSTRUCTION.					
	Number of bar.	Length of bar, in feet.	Size of cut, in feet.	Cents.	Cubic yards.	Amounts.
Skaneateles outlet	1	600	60×10	26	3,000	$800 00
Bonta's bridge	2	1,700	60×10	26	10,000	2,600 00
Above Bonta's	3	500	60×10	26	3,000	780 00
Weedsport bridge	4	800	60×12	26	.....	.....
Hickory island	5	5,100	60×13	20	26,720	5,344 00
New bridge	6	1,300	60×10	26	3,500	910 00
Mosquito point	7	2,200	100×10	15	13,182	1,977 00
Howland's bridge	8	400	60×10	26	3,000	780 00
Campbell's island	9	2,100	60× 9	26	8,393	2,182 00
Railroad bridge	10	9,700	60× 8	26	70,736	18,391 00
Railroad to Clyde river	.....	6,400	100× 8	13	104,681	13,609 00
Clyde river to toll-bridge	.....	5,610	150× 8	13	76,098	9,892 00
Toll-bridge to aqueduct	.....	3,300	150× 7½	13	13,991	1,819 00
Replacing old bridges						$59,584 00
Add contingencies						2,416 00
Total						$62,000 00

"B"— *Estimated cost at contract prices of a channel, etc.*— (Concluded).

LOCATION OF BAR.	TO COMPLETE CHANNEL FORTY FEET WIDE.				
	Number of bar.	Length of bar, in feet.	Size of cut, in feet.	Cubic yards.	Amounts.
Skaneateles outlet	1	600	40×10	2,000	$520 00
Bonta's bridge	2	1,700	40×10	7,000	1,820 00
Above Bonta's	3	500	40×10	2,400	624 00
Weedsport bridge	4	800	60×12	.....	.....
Hickory island	5	3,900	40×10	8,000	1,600 00
New bridge	6	1,300	40×10	1,800	468 00
Mosquito point	7	2,200	100×10	13,200	1,980 00
Howland's bridge	8	400	40×10	2,500	650 00
Campbell's island	9	2,100	40× 9	2,500	650 00
Railroad bridge	10	9,700	40× 8	56,000	14,560 00
Railroad to Clyde river	.....	6,400	50× 8	30,000	3,900 00
Toll-bridge to aqueduct	.....	.....	.....	.....	400 00
Replacing old bridges					$27,172 00
Add contingencies					2,828 00
Total					$30,000 00

1864. March 19, Senate No. 74.

The canal board, to which was referred the following resolution of the Senate, to wit: Resolved, that the canal board are respectfully requested to inform the Senate whether the erection of the enlarged Erie canal across the Montezuma marshes and the Cayuga and Seneca canal, and towing-path across the marsh between the outlets of the Seneca and Cayuga lake affects the discharge of water from Cayuga lake, so as to increase or affect the marsh on Cayuga inlet at Ithaca; would respectfully report:

That the board is unable to render a full and satisfactory answer to the Senate resolution from any facts on record in the State departments. Various reports have been made from time to time by engineers and canal commissioners, and by commissions delegated by the State Legislature in reference to the construction of the enlarged Erie canal across the Montezuma marshes as affecting the flow of water over the same having particular reference to that portion of the marshes lying south of the canal. In all of the documents and reports relating to the subject but one result was ascertained, viz.: That the conducting of all the waters which formerly flowed over the surface of the marshes through the Montezuma aqueduct would dam the water back above the canal in time of freshets, and impede its natural flow particularly in time of high water. No measurements or examinations have been made by the authorities of the State since the completion of the canal at the location under consideration to ascertain the extent to which the water had been set back in consequence of the construction of the enlarged canal. The last report made will be found in the report of the State Engineer and Surveyor for the year 1860, both from the Hon. Van R. Richmond, and a committee selected to make a report relative to the completion of the drainage of the Cayuga marshes. In both of these documents the fact that the State structures would retard the free passage of the high waters north is established, but how far south from the canal the waters would be affected could not be fully considered, for at that date the canal was not completed, the waters not having been entirely conducted through the aqueduct until subsequent to the rendering of the reports in 1860.

It is, however, proper to judge from the action of the waters during the progress of the canal work that the discharge of the waters from Cayuga lake has been obstructed by the barriers

placed across the marshes by the State, and also that the marshes on the Cayuga inlet are more or less affected in the spring, but from the information now known by former examinations it is impossible to determine to what extent the marshes at the head of the lake are increased without having measurements and facts obtained which shall show the effects of the obstruction since the completion of the canal.

1866. January 23, Assembly No. 38. State Engineer's Report.

In the spring of the year 1857, while the canal across the Montezuma marshes was being constructed, an unusually severe freshet overflowed the unfinished portions of the work for an area of some 15,000 square feet. It was then feared by parties owning property south of the improvement that after its completion the aqueduct there located would not be of sufficient capacity to pass such an increased volume of water. In order to fully test the capabilities of this structure under any such emergency, Mr. Goodsell caused very careful measurements and examinations to be made during the unprecedented floods that occurred last March. In the report of the Hon. George Geddes for 1857, it is stated that during the heavy freshets of that year the quantity of water passing Jack's reefs was 15,269 cubic feet per second, with a head of 2.16 feet at the upper end of the aqueduct. The floods of March 1865 were still more severe, for at that time the quantity of water passing Jack's reefs was 19,435 cubic feet a second, with a head of only 3.79 feet at the aqueduct. It will thus be seen that in 1865, after the improvement had been fully completed, the aqueduct passed 4,166 cubic feet more water per second than it did in 1857, while the head was only increased 1.63 feet.

Observations taken on the twentieth day of March, gave at the aqueduct a fall or head of $1\frac{1}{8}$ inches, and the river surface on the up-stream side, 3.79 feet above the trunk bottom, making the water 1.63 feet higher, with a flow 4,166 feet greater than in 1857. This freshet has fully demonstrated the capacity of the aqueduct to pass extreme floods under very slight heads, and without endangering in the least the safety of the channel. A gauge of the river was also made in August last at extreme low water, when it was proved that only 909 cubic feet a second were passing in the main channel at Jack's reefs, and none at all in the State ditch at that point.

1866. January 10. Report of Canal Appraisers.

A large proportion of the aggregate awards made by the board were made to claimants for damages sustained in consequence of the construction of the enlarged Erie canal across the Montezuma marshes, and the aqueduct across the Canandaigua outlet and Seneca river.

1867. February 9, Senate No. 33. Canal Appraisers' Report:

The present board have heard a large number of claims arising from the construction of the aqueduct across the Seneca river near Montezuma. The claimants allege that the channel of that stream, and also of the Canandaigua outlet or Clyde river, were so contracted by this work as to obstruct the natural flow of the water, and to set the same back upon the lands lying upon the margins of these streams; and the appraisers are satisfied that the claimants are in a measure correct. Tracts of timber formerly in a healthy condition are filled with trees decayed and dying. In some cases almost all the timber is destroyed. Farming lands too, which their owners cultivated previous to the construction of this aqueduct, and the new line of canal connected therewith, have been rendered untillable, and fair pasture land has been utterly ruined. Now, in view of these facts, what were the appraisers to do? Could they, under the law, refuse to hear these claims, or, hearing them, decline to award damages? Could they treat witnesses testifying to this condition of things as guilty of perjury? Nay, could they discredit the evidence of their own senses? The appraisers have not so understood their duty. The appraisers have no doubt that the water has been permanently raised in the Cayuga lake and Seneca river by the construction of this aqueduct, nor is there a question in their minds that the closing of the channel of the Clyde river and the opening of a new and insufficient one, has had the effect to raise the water in that stream, and if it does not keep it higher the year round, it holds it longer in the spring, indeed at all times when there is a heavy rain. The inhabitants living upon the banks of this river claim that the land is seriously affected by this cause as far up as the village of Clyde, a distance of about 10 miles. If this is so it is a question worthy of serious consideration, whether it would not even now be more economical for the State to construct one or more culverts under the canal of sufficient capacity to pass the water of this river to the Seneca river in its original channel, than to pay the damages which are likely to be established by the claimants. The Clyde river is a

very sluggish stream, and it flows through a low, level section of land, which, when the river ran in its natural channel was only a trifle higher than the surface of the water. Of course a very slight obstruction would have the effect both to raise and to hold the water upon the adjoining lands. These being barely high enough above the water before the State changed the outlet of the river (and, it is claimed, dammed it) not to be swampy and untillable, it is alleged that the damming and consequent raising of the water has injuriously affected several thousand acres. The appraisers have heard the claims of a few individuals residing in this section, but they have been disinclined to award damages to the full extent proven. They have preferred to hold the claims until an opportunity shall be afforded them to make a thorough personal examination of the valley through which the Clyde flows.

1868. January 29. Report of Canal Appraisers.

Refers to preceding report and says Montezuma aqueduct could, with comparatively small outlay, be so altered as in great degree to reclaim large tracts of lands injured by it, and to avoid further cause of complaint.

1870. January 4, Assembly No. 4. Canal Commissioners' Report.

Draining Cayuga marshes. The commissioner has been solicited by various interested parties to recommend to the Legislature the propriety of making another appropriation for, and a consequent resumption of the work of draining the Cayuga marshes by dredging or deepening and widening Seneca river. It is claimed that previous to the enlargement of the Erie canal, across the marshes at and near Montezuma, many thousand acres of land were reclaimable which have since been submerged by the construction of the canal banks to an extent rendering them nearly or quite valueless in consequence of the setting back of the waters of Seneca river and its tributaries. The commissioner has, therefore, felt called upon to give the subject a full examination, and he presents the following as a result:

The Legislature of 1853, passed an act (chapter 178) to provide for the effectual draining of the Cayuga marshes and swamp lands, and appropriated $100,000, based on the estimate of Hon. Geo. Geddes, of $144,687. The act further provided that on the completion of the work three appraisers should be appointed who should assess the benefits upon the lands improved, and which lands should reimburse the State treasury. In pursuance of this act the bar at

Jack's reefs was removed in 1857 at a cost of $169,000 thus exceeding the estimate for the whole work $24,313 in the removal of a single bar. Subsequently, $28,727 were expended in a partial removal of the bars lying between Jack's reefs and the New York Central direct line railroad bridge. Between the last-named point and the marsh lands lying above the Erie canal at Montezuma, the river has been widened and deepened at a further cost of $30,000, to relieve the lands lying south of the canal and which, it is claimed, are damaged by overflow resulting from the new embankment, and which several sums make a total expenditure under the act of 1853 of $227,727. But while the work has been in progress the Legislature has from time to time authorized the canal appraisers to hear and determine the claims for damages in consequence of the construction of the aqueduct across the Seneca river, near Montezuma, by which the channel of that stream and also of the Canandaigua outlet or Clyde river, are so constructed as to obstruct the natural flow of the water, and the same being set back upon claimants' lands situated above the aqueduct and adjacent to the streams. Claims have been heard by the appraisers and awards made to the amount of $72,315.60. It is believed that all the claims from this cause have been filed in the appraisers' office, and the amount of such claims unheard is $65,869. It is safe to deduct a large percentage from these claims, and by applying the rule of damage in the claims which have been settled to those which are still undecided, it is safe to say that the latter will be reduced to $40,000, which, added to previous payments, will make a total of $110,316.50; which amount, it is believed, may be considered as in full liquidation of all claims for damages in consequence of the enlargement of the canal across the marshes, and $117,450.50 less than the amount already expended for the effectual draining of the Cayuga marshes and swamp lands.

But a second question presents itself. What has been done in removing obstructions and deepening and widening Seneca river according to the official reports, as well as practically demonstrated, has had the effect to considerably lower the river, and also to cause a more rapid subsidence of freshets above Jack's reefs. And this seems to be corroborated by the fact that parties owning lands on the river below complain that they are correspondingly deluged by the spring freshets being more suddenly let down through the cut at Jack's reefs and in the bars above.

There are indications that claims for damages resulting are to be made for a considerable distance below Jack's reefs and extending to if not down the Oswego river. Already the canal appraisers have heard several claims of this nature. Two years ago the Legislature was asked to make an appropriation for the construction of an embankment at the head of Onondaga lake to protect the coarse salt fields from destruction in consequence of floating ice in the winter and especially spring seasons, it being held that the water was raised to an unprecedented height each spring on account of the improvement of the cut at Jack's reefs. No estimate of the cost upon a plan that professes an entire completion of the drainage of the marshes is contained in any of the published reports upon the subject except the original one by Mr. Geddes already mentioned amounting to $144,687. But the work has, however, cost up to date, $227,727, and the official reports agree in the opinion that a very large amount of work remains to be done to complete any plan that will prove effectual. The condition of the enterprise may be briefly stated then as follows, viz.:

First. Two hundred and twenty-seven thousand seven hundred and twenty-seven dollars have been expended, and as the work has not been completed no part thereof has been assessed and recovered from the property intended to be benefited.

Second. Since the cost of the work was originally estimated there has been no estimate made of the cost to complete on any certain and effectual plan except at a further expense of nearly $300,000.

Third. It appears from official figures that if the State had in the first instance paid the claims for damages, the total amount would have been considerably less ($9,117,410.50) than the amount expended pursuant to the act of 1853 up to date.

Fourth. It would seem that if the work should be completed on the most approved plan, the chief result would be in changing the location whence claims for damages would originate — that is, from above to below Jack's reefs.

It should be borne in mind that the plan first adopted, to drain the Cayuga marshes, was afterwards changed to one to compensate for the obstructions by the State at Montezuma. See Engineer's Report to Canal Commissioners, September 30, 1862. As hereinbefore shown, the damages arising on account of obstructions by the State are in course of settlement in quite another

manner, so that in that direction there appears to be no reason for compensating for such damages by any work upon the river. But if it should be deemed advisable to return to the work of draining the marshes, it might be well to stop and inquire if the total value of the lands to be reclaimed would equal the cost of reclaiming them. Or if such lands have been purchased at a nominal sum should the State be made simply an agent to do the work, advance the money required, and be reimbursed when the work is completed, which declaration in the nature of things will doubtless be indefinitely postponed. In view of the uncertain cost to complete this work, also of the large amount paid and to be paid for damages alleged to have been caused by the enlargement of the Erie canal at Montezuma, and which it is believed covers nearly if not all the claims that can arise from that cause, and also of the significant threatenings of claims from parties below Jack's reefs and on the shores of Onondaga lake, which in some localities is thickly covered with salt manufactories, and acknowledging that when such claims shall have been enlarged by enlarging the cuts of the bars in Seneca river, the claims resulting may exceed those already filed and paid at Montezuma. The undersigned feels it to be his duty to admonish the Legislature to well and truly examine any future claims or efforts to secure further appropriations to provide for the effectual draining of the Cayuga marshes and swamp lands. Reference is made in conclusion, to a report and estimate made by Division Engineer Goodsell, January 18, 1865, in answer to a resolution of the Senate, in which it will be seen that the estimated cost to effectually complete the work is given in detail attached to the report, amounting to $292,380.

S. T. HAYT,
Canal Commissioner.

1870. Chapter 492 of Laws. For removing obstructions from the Cayuga outlet and Seneca river, $30,000, appropriated by chapter 304, Laws of 1868, which sum is hereby appropriated again, and shall be expended in pursuance of and as provided in said chapter, and for no other purpose whatsoever.

1871. January 30, Assembly No. 6. Canal Commissioners' Report.

Chapter 492 of 1870 reappropriated $30,000 appropriated by chapter 304 of 1868, which was to be paid out of funds not other-

wise appropriated in the fund for extraordinary repairs. None not otherwise appropriated.

1872. Chapter 781. Section 1. The sum of $20,000 is hereby appropriated in addition to the sum of $30,000, appropriated by chapter 364 of the Laws of 1868, which latter sum is hereby reappropriated for the purpose specified in chapter 179 of the Laws of 1858. The sum hereby appropriated shall be paid out of any funds appropriated or to be appropriated for extraordinary repairs on the middle division. Section 2. Said sum, or so much thereof as may be necessary, shall be applied, under the direction of the canal commissioners in charge, to the purpose specified in chapter 179 of the Laws of 1858, as amended by chapter 465 of the Laws of 1862, and to no other purpose whatever.

Chapter 850. For removing the obstruction from the outlet of Cayuga lake and the channel of Seneca river, the sum of $20,000, or so much thereof as may be necessary, and the sum of $30,000, appropriated by chapter 304, Laws of 1868, is hereby appropriated for the same purpose.

1872. January 20, Assembly No. 29.

One of the greatest arguments against the draining of the Cayuga marshes, for the purpose of reclaiming the land, is that the soil-muck will either go down with the water or follow it down sooner or later afterwards.

Appropriations were made in chapter 179, 1858; 465, 1862; 304, 1868, and 492, 1870, for removing obstructions from Cayuga outlet and Seneca river, but still no money, on account of defects in the acts. It is for completing the opening of a new waterway for the Clyde river or Canandaigua outlet, to, under and below the aqueduct across the Seneca river on the Cayuga marshes at Montezuma, the object being to fully compensate for having turned the said Clyde river or Canandaigua river from its natural course and to prevent any back water on lands above the said aqueduct coming out of the want of it. This work has never been fully completed, according to its original design and plan, it having been arrested for want of sufficient appropriations to carry it on. There has latterly been sought to be coupled with it another measure, "draining the Cayuga marshes." Of course the drainage of the marshes would incidentally help this object if it were done, but this, confined to its own legitimate purpose and for no other purpose, would not help that.

1873. Chapter 760 of Laws. The sum of $30,000 is hereby appropriated for removing obstructions in the outlet of Cayuga lake and the channel of Seneca river, reappropriated by act, chapter 850 of Laws of 1872, but which proved unavailable for this purpose, shall be paid by the Comptroller from the general fund on the drafts of the canal commissioner of the middle division.

Concurrent resolution, That a commission, consisting of the Hon. Josiah B. Williams, of Tompkins county, Hon. George Geddes, of Onondaga county, Hon. Sterling G. Hadley, of Seneca county, Thomas S. Smith, of Clyde, Wayne county, and Henry Stokes, of Cayuga county, be appointed to proceed at once to the Seneca river and examine, without expense to the State, and report upon the condition of the same; the crossings over it, consisting of the New York Central railroad bridge (direct line), the Seneca towing-path bridge, the aqueduct, the New York Central railroad bridge (old route), and such other obstructions as they may find to the full, free and natural flow of the water through the said Seneca river and the outlets of the Seneca, Crooked, Cayuga lakes and the Canandaigua and Clyde rivers. Said committee to report to the next Legislature.

1876. January 11, Assembly No. 6. Work done in dredging under plan adopted in 1873 completed. Chapter 850 of 1872 appropriated $20,000 and chapter 766 of 1873 appropriated $30,000.

1879. March 14, Assembly 92. Report of State Engineer and Surveyor in relation to obstructions in the outlet to Cayuga lake.

The State Engineer and Surveyor, in compliance with the resolution of the Assembly passed February 20, 1879, calling for an estimate of the cost of removing obstructions in the outlet of Cayuga lake, would respectfully report: That the Cayuga lake is drained by the Seneca river which empties into the Oswego river below the outlet of Onondaga lake. The Seneca river, from where it enters the Oswego to Baldwinsville, a distance of about 6 miles, is navigable; at this point a dam has been erected which, according to the Laws of 1809, chapter 54, should not be more than 7½ feet in height. From the Baldwinsville dam to Cayuga lake is 38 miles, the river in this distance falling, by Geddes' report of 1851, 12.64 feet, or an average of ⅓ foot or 4 inches per mile. This fall, if uniform with a channel 400 feet wide at the surface and 4 feet deep, would carry 2,217.6 cubic feet a second, using Humphreys & Abbott's formula and corrections for bends in the river, or

twice the flow of the stream in low water, as estimated by Geddes. The intention of the engineers formerly engaged on the river seems to have been to obtain a uniform depth and width of channel throughout the whole length in order to carry off the floods and to drain the marshes at low water. The first work done by Geddes under the appropriations of 1852, as is shown by the maps in the division engineer's office at Syracuse, was on the canal across the bend at Jack's reefs, after which he cut down the bars at various points on the river, and succeeded in lowering Cross lake 2 feet; the surface of the water at Mosquito point about the same amount, and the surface of the water in Cayuga lake by 1 foot. The work done by Soule & Whitford, as shown by the same map, under the latter appropriations, lowered the water surface at Mosquito point 2 feet, and the surface of Cayuga Lake 1¼ feet. No work was undertaken above Montezuma, and the bed of the river remains the same as it did before any work was contemplated. By an examination of the profile accompanying this report it will be seen that the blue line or water surface according to Whitford, at bar No. 2, has a sudden rise of 6 inches, owing to the fact that a large portion of the channel has never been excavated to its proper width. The next obstruction is at bar No. 10, where the surface is again suddenly elevated nearly 1½ feet. This is caused by the lack of width and depth in the channel across this bar. The next and the most important obstruction on the river between Cross lake and Montezuma is the New York Central railroad bridge. The foundation of this bridge is a raft of timber extending across the whole width of the river; the top of this foundation is 3 feet above the bottom of the river as dredged to within a short distance both above and below the bridge, and prevents the surface of the water from being lowered at Montezuma. Above Montezuma no work has been done on the river, and the material remaining above the grade of the bottom of the stream acts as a dam to prevent the lowering of the lake surface. In order to reap the full benefit of the expenditures of former years, the work left undone on bars Nos. 2, 10 and 11 should be completed, and the foundation of the railroad bridge lowered so as not to obstruct the flow of the stream. This dredging would probably lower the water at Montezuma 2 feet or more, and cost in the neighborhood of $17,000. In order to affect the level of Cayuga lake, the material in the channel above Monte-

zuma should be removed to conform to the waterway below that point. To lower the lake 1 foot below the present level would require the expenditure of about $30,000, in addition to the work on the stream below Montezuma, and to lower it 2 feet the sum of $100,000. These estimates are based on the supposition that no hard material is to be encountered, and upon such information as is now in the engineer's office. Before any work is done, it would be advisable to have a thorough survey and examination made of the subject.

HORATIO SEYMOUR, JR.

1879. Assembly No. 118. General order No. 613. An act to provide for the removal of obstructions from the outlet of Cayuga lake and the channel of Seneca river.

1885. January 26, Assembly No. 38. Report of State Engineer.

Report on the work done pursuant to a concurrent resolution of the Legislature relative to the establishment of bench-marks to fix and determine the levels of Cayuga and Cross lakes.

The resolution is as follows: Whereas, Several embankments have been made across the outlet of Cayuga lake and the channel of Seneca river by the State, railroad companies and public and incorporated bridge companies; and whereas there are no established levels or marks to determine the effect from year to year of these works upon the relative water level of Cayuga lake and its outlet; resolved, if the Senate concur, that the State Engineer and Surveyor be and he is hereby directed to run a line of continuous levels from Cayuga lake to Cross lake, establishing bench-marks at high-water mark along the line of said levels as follows:

Bench-mark No. 1 to be established at high-water mark on the lower miter-sill of lock at the entrance of the Cayuga branch of the Cayuga and Seneca canals which show the level of Cayuga lake. Bench-mark No. 2 shall be established at high-water mark on the lower miter-sill of what is known as Mud lock at junction of the Seneca branch with the Cayuga branch of said canal. Bench-mark No. 3 shall be established at high-water mark on the central pier of the Erie canal aqueduct at the crossing of Seneca river. Bench-mark No. 4 shall be established at high-water mark at the central pier of the crossing of the New York, West Shore and Buffalo railroad. Bench-mark No. 5 shall be established at high-water mark on the central pier of the New York Central and Hudson River Railroad company's crossing.

Bench-mark No. 6 shall be established at high-water mark at the cut through Mosquito point bar. Bench-mark No. 7 shall be established at high-water mark of Cross lake at a suitable place in the discretion of the engineer in charge. All of the above bench-marks shall be established at high-water mark and marked on the map of the outlet of the Cayuga lake and in the channel of the Seneca river so that they may be easily found and noted by an expert in engineering. Said map is now on file in the office of the State Engineer and Surveyor. It shall be the duty of the State Engineer three times in each year, namely during the first ten days in each March, August and December, to detail an engineer to examine and report to his office the relative condition of the water level as compared with the above established benches. Also to report upon the actual depth at the point where these bench-marks are established. Also to take the actual water level at the point each side of the Erie canal embankment where the old channel of the Canandaigua or Clyde river is crossed by said embankment. The result of said levels and measurements shall be published annually in the report of the State Engineer to the Legislature, and in the event that the department of State Engineer shall be abolished or absorbed by any other department, the duties above detailed shall be performed by the department succeeding to that of State Engineer.

The work of carrying out these requirements was intrusted to Denison Richmond, division engineer of the middle division of the State canals, who makes the following report: The foregoing resolution requires the bench-marks to be established at high-water mark, and at the same time, in most cases, designates the particular places where they shall be made. To fulfill these requirements literally was found to be impossible, but the benches as now established will furnish all the information required by the resolution. The values given at these benches refer to the base or datum line established by Hon. Geo. Geddes in 1851. This course was adopted as testimony given by canal engineers since that time before the board of canal appraisers was based on the values of benches derived from said base. While all future records and water profiles can hereafter on this basis be more readily connected and compared with those on file, the datum line referred to was made 8.137 feet above the surface of Cayuga lake as found October 1,

1851, and at that time established by three benches cut in the face of the rock at Cayuga. In State Engineer's report for the fiscal year ending September 30, 1862, page 357, these benches, owing to the disintegration of the rock are now obliterated; but in 1862, other benches along the river were established from these by Howard Soule, Jr., and were used in connection with the present line of continuous levels. The bench on the Montezuma aqueduct was in the best state of preservation and the most permanent being in a position least liable to disturbance by frost or accident. This was therefore made the connecting bench, although the variations at some of the other benches were so slight as to have made no practical difference which was selected. Great care was observed in running the original line of levels; but to prove the work a test was made, the result of which was most satisfactory. The entire work, including test required about 50 miles of careful leveling, and was done without the employment of extra help. It involved considerable time and expense, and to take the required measurements three times a year will take about nine days, as the points are so widely separated and so difficult to reach. Following is a description of the benches which are also marked and graphically described on the map indicated in the resolution. I have also appended a table showing measurements to date as required, and also the principal data bearing upon the subject compiled from the records on file in this office, and reduced to the common base as adopted. These were prepared by Mr. D. E. Whitford, who was in charge of the work done under the appropriation of 1872 and 1873, and is therefore familiar with the old benches and the records of high and low water for the last ten years. Bench-marks established in 1884 between Cayuga and Cross lakes, in accordance with a concurrent resolution of the Legislature. These bench-marks refer to the datum line established by Hon. Geo. Geddes in 1851:

No. 1, elevation, —0.008. On coping between the anchor irons, 6½ inches from the tow-path or west lower hollow quoin, Cayuga lock.

No. 2, elevation, —0.234. On coping between the anchor irons, 23 inches from the berme or south lower hollow quoin, East Mud lock.

No. 3, +6.049. On coping of parapet wall, northeast corner of projection over fifteenth pier from east end, Seneca river aqueduct.

No. 4, —4.799. Southeast corner coping, tenth pier from east end, New York, West Shore and Buffalo railroad bridge.

No. 5, —4.687. Southwest corner coping, forty-ninth pier from east end, New York Central and Hudson River railroad bridge.

No. 6, —0.336. Center of gray limestone monument, east side of highway, 54.3 feet northerly from northeast corner, and in line with east side of Mosquito point bridge.

No 7, —6.059. West corner of stone supporting south end of west truss, 0.65 feet from west side and 2.1 feet from end of truss casting, iron road bridge, 1 mile west of Cross lake.

Water record of Cayuga and Seneca lakes and Seneca river, compiled from records in division engineer's office at Syracuse. (*December*, 1884.)

Water surface given below datum line established by Geddes in 1851.

LOCATION.	Miles from Cayuga lake.	October 1 1851	August 31 and 1861	Hoosick Watch house. March 10 1884	April 10 and 11 1884	May 28 and 29 1884
Cayuga lake		8 11	7 03	2 70	9 71	0 90
Mud lock at tow-path bridge { up stream side	14	8 31	7 16	3 90	9 61	
Mud lock at tow-path bridge { down stream					9 70	
Seneca river aqueduct { up stream side	64			3 70	9 90	
Seneca river aqueduct { down stream		10 73	10 76	3 97	3 19	11 69
Canandaigua river south of canal	64			3 59	3 20	
Canandaigua river north of canal	64			4 11	3 66	
New York Central and Hudson River railroad crossing	10	11 80	12 12		8 81	12 09
Mosquito point { head of bar at bridge	15¼	12 63	11 20		8 91	14 01
Mosquito point { foot of bar		13 12	14 78		4 08	15.00
Cross lake	25	13 98	17 95		6 09	15 98

1890. March 3, Assembly No. 62. State Engineer's Report.

I attach table No. * * * 3, giving the water record of Cayuga and Cross lakes, as per concurrent resolution of 1884. This record does not accomplish the desired object, if I understand it correctly. The dates of measurement are fixed by the resolution, and do not show either highest or lowest water, nor do the results afford any comparison between the original and present condition of the lakes and river. If it is desirable to continue these measurements, self-registering gauges should be set at the specified points, which would give a complete record of the fluctuations of the water. The comparative condition can not be obtained, as no records exist of the state of the lakes and river channel before the attempted improvement of the river channel. I doubt if any good result will follow the continuance of these measurements.

Water record of Cayuga and Cross lakes and Seneca river as per concurrent resolution of 1884.

Water surface below datum.

LOCATION.	Bench-mark number.	Miles from Cayuga lock.	1884.				1885.					
			AUGUST 5, 6 and 7.		DECEMBER. 2, 3 and 4.		MARCH 4, 5, 6 and 7.		AUGUST 6 and 7.		DECEMBER 2, 3 and 4.	
			WATER.		WATER.		WATER.		WATER.		WATER.	
			Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.
Cayuga lake	1	0	— 8.59	10.09	—10.11	8.97	—10.00	9.08	— 9.33	9.75	— 8.78	10.30
Mud lock	2	1½	— 8.80	10.42	—10.22	9.00	—10.17	9.05	— 9.54	9.68	— 8.91	10.21
Canandaigua river, south of canal	CS	6¼	—11.20	5.60	—12.68	4.00	—12.54	4.60	—11.93	5.20	—11.09	6.10
Aqueduct	3	6½	—11.42	7.03	—12.98	5.47	—12.66	5.70	—12.19	6.20	—11.26	7.10
Canandaigua river, north of canal	CN	6¾	—11.58	5.40	—13.01	4.00	—12.83	4.90	—12.48	5.50	—11.48	6.20
West Shore railroad crossing	4	9	—11.85	3.75	—13.20	2.40	—12.70	2.80	—12.87	2.60	—11.48	3.60
			.....	7.80	.....	6.50	.....	7.70	.....	7.50	.....	8.50
N. Y. C. and H. R. R. R. crossing	5	10	—12.41	4.80	—14.19	3.00	—13.48	3.90	—13.48	3.90	—12.66	4.70
Mosquito Point	6	15¼	—15.92	0.10	—16.81	*	—16.70	*	—16.04	*	—14.23	1.80
			.....	7.20	.....	6.30	.....	6.40	.....	7.10	.....	8.90
Cross lake	7	25	—17.32	19.20	—17.55	19.00	—18.00	18.50	—17.85	18.70	—15.38	21.10

* Bed dry.

Water record of Cayuga and Cross lakes and Seneca river, etc. — (Continued).

LOCATION.	1886.						1887.						1888.					
	MARCH 8 AND 9.		AUGUST 5, 6 AND 7.		DECEMBER 7.		MARCH 4.		AUGUST 5.		DECEMBER 2.		MARCH 2.		AUGUST 6.		DECEMBER 3 AND 4.	
	WATER.		WATER.		WATER.		WATER.		WATER.		WATER.		WATER.		WATER.		WATER.	
	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.
Cayuga lake	— 8.11	10.97	— 8.49	10.59	— 8.33	10.75	— 6.82	12.39	— 8.22	10.86	— 9.75	9.33	— 9.00	10.08	— 8.88	10.20	— 9.28	9.80
Mud lock	— 8.26	10.96	— 8.76	10.46	— 8.46	10.76	— 6.82	12.40	— 8.35	10.87	— 9.97	9.25	— 9.11	10.11	— 9.09	10.13	— 9.48	9.74
Canandaig'a river, south of canal	— 9.61	7.60	—11.88	5.40	—10.20	7.00	— 7.89	9.30	—10.87	6.30	.....	.....	—10.14	7.09	—11.42	5.7	—10 66	6.5
Aqueduct	— 9.72	8.70	—12.12	6.30	—10.35	8.10	— 8.14	10.30	—11.09	7.30	—12.42	6.00	—10.26	8.1	—11.63	6.8	—10.84	7.6
Canandaig'a river, north of canal	— 9.93	7.80	—12.24	5.40	—10.59	7.10	— 8.30	9.40	—11.51	6.20	—12.64	5.1	—10.57	7.2	—11.98	5.7	—11.12	6.6
W. S. R. R. crossing	—10.24	5.20	—12.76	2.70	—10.79	4.50	— 8.82	6.70	—12.00	3.50	—12.91	2.6	—10.95	4.5	—12.29	3.2	—11.35	4.1
	.....	10.50	.....	7.60	.....	9.40	.....	11.60	.....	8.40	.....	7.5	.....	9.4	.....	8.1	.....	9.9
N. Y. C. and H. R. R. R. crossing	—10.74	6.60	—13.31	4.00	—11.61	5.70	— 9.18	8.10	—12.55	4.80	—13.67	3,7	—11.45	5.9	—13.00	4.4	—12.19	5,2
Mosquito Point	—12.15	4.00	—16.26	*	—13.39	2.60	—10.52	5.50	—15.41	0.60	—16.57	*	—13.22	2.8	—15.63	0.4	—14.69	1.3
	.....	11.00	.....	7.00	.....	9.70	.....	12.60	.....	7,70	.....	6.5	.....	9.9	.....	7.5	.....	8.4
Cross lake	—14.01	22.50	—17.71	18.80	—15.39	21.10	—12.09	24.40	—17.17	19.30	—17.42	19.1	—14.53	2.2	—17.40	19.1	—14.83	21.67

* Bed dry.

Water record of Cayuga and Cross lakes and Seneca river, etc. — (Concluded).

LOCATION.	1889.						1890.				Remarks.
	MARCH.		AUGUST.		DECEMBER.		MARCH 6 AND 7.		AUGUST 8.		
	WATER.		WATER.		WATER.		WATER.		WATER.		
	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	Surface.	Depth.	
Cayuga lake	— 8.93	10.15	— 6.92	12.16	— 6.56	12.52	— 7.41	11.67	— 7.47	11.61	Depth on lock miter-sill.
Mud lock	— 9.04	10.18	— 7.00	12.29	— 6.96	12.26	— 7.55	11.67	— 7.67	11.55	Depth on miter-sill.
Canandaigua river, south of canal	— 2.88	7.26	— 8.82	8.3	— 8.29	8.8	— 8.92	8.2	—10.51	6.6	Depth of river.
Aqueduct	—10.07	8.29	— 9.03	9.4	— 8.56	9.9	— 9.23	9.2	—10.78	7.6	Depth on aqueduct foundation.
Canandaigua river, north of canal	—10.28	7.44	— 9.33	8.4	— 8.73	9.0	— 9.27	8.4	—11.23	6.5	Depth of river.
West Shore R. R. crossing	—10.47	5.0	— 9.84	5.7	— 8.74	6.8	— 9.75	5.8	—11.50	4.0	Depth on natural bed.
	.....	9.9	.....	10.6	.....	11.7	.....	10.7	.....	8.9	Depth in channel dredged.
N.Y.C. and H.R.R.R. crossing	—10.97	6.4	—10.47	7.0	— 9.17	8.2	— 9.78	7.6	—12.31	5.1	Depth on bridge foundation.
Mosquito point	—12.25	3.8	—12.92	3.1	—10.59	5.4	—10.91	5.1	—15.16	0.8	Depth on natural bed.
	.....	10.9	.....	10.2	.....	12.5	.....	12.2	.....	7.9	Depth in channel dredged.
Cross lake	—14.13	22.4	—13.32	23.2	—11.75	24.8	—12.95	23.6	—16.23	20.3	Depth on iron bridge.

Measurements at structures are taken on lower side, but at the aqueduct the measurements in Canandaigua river are ¾ mile from the aqueduct, but near the canal on each side. The new channel below merely increases the discharging capacity from the aqueduct to a point 2 miles below it. (Extract from letter of H. T. Beach, division engineer.)

Estimate of water supply to Montezuma level, and to that part of Cayuga and Seneca canal adjacent, is 4,000 cubic feet a minute. Estimate of supply to rest of Seneca canal is 18,000 cubic feet a minute.

Aqueduct 31 spans, each 22 feet.

Tow-path bridge at Seneca canal crossing, 5 spans, clear width of bridge 259′ 9″.

1860. Chapter 412 of Laws. For the completion of the draining of the Cayuga marshes, and the removal of obstructions from Seneca river the sum of $30,000, or so much thereof as may be necessary, to be levied and collected from the owners of the lands benefited in the manner provided by chapter 178 of the Laws of 1853; and when so collected and paid into the treasury, to be paid over to the canal commissioners for the purposes aforesaid; but nothing in this act contained shall be construed to impair the claim of the State for reimbursement of the moneys heretofore appropriated from the treasury.

Chapter 464. The unexpended balance of $30,000 appropriated by chapter 179 of the Laws of 1858, for the removal of obstructions from the outlet of Cayuga lake and the channel of Seneca river, is hereby appropriated to the same object, to be paid out of any moneys appropriated for the enlargement of the Erie canal; said unexpended amount which is hereby reappropriated, being the sum of $20,411.

Thesis of F. E. Bissell, B. C. E., Cornell, 1878.

Cayuga lake basin, 800 square miles; Seneca and Crooked lakes basin, 675 square miles; Clyde river basin, 800 square miles; Skaneateles and Owasco lakes, and other creeks, add 480 square miles; total 2,750 square miles.

Mean annual rainfall from Fanning: Auburn, 34.42 for twenty-two years; Ithaca, 34.71 nineteen years; Geneva, 30.87 nineteen years; Penn Yan, 28.42 thirty years; Rochester, 32.56 thirty-five years; average of district by C. A. Schott, 34.71.

At Ithaca, for nineteen years, the following is the average for each month, the first figure being the monthly average, and the second the per cent of the total annual rainfall: January, 1.81, 0.63; February, 1.76, 0.61; March, 2.51, 0.87; April, 3.00, 1.04; May, 3.54, 1.22; June, 3.83, 1.33; July, 3.31, 1.15; August, 2.99, 1.03; September, 3.41, 1.18; October, 3.34, 1.16; November, 2.87, 0 99; December, 2.34, 0.95; mean monthly fall, 2.89. Assuming a two-inch a day maximum rainfall, we have 148,156.26 cubic feet a second falling on this water shed, of which two-thirds is estimated to reach the river, less 200 cubic feet from evaporation.

Area of Cayuga lake, 100 square miles; of Seneca and Crooked 120; of Skaneateles and Owasco 60; and of Clyde river 40; total 320.

Volume falling on sheds of streams entering at Ithaca, 8,961 cubic feet. To compute flow of river use Weisbach $\frac{c^2}{2g} = \sqrt{\frac{Fh}{Slp}}$

F = 4,800 square feet cross section, p = 424 feet wetted perimeter, h = 12.64 fall from Cayuga lake to Baldwinsville, l = 222,450 feet. S = coeff. of friction for app. val. of c of 2.306. Hence c. 2.25 and flow is 10,800 cubic feet a second.

Seneca and Crooked lakes are drained into Cayuga lake, setting back the waters of Cayuga lake. The Seneca river flowing into Cayuga lake raises the water at that end, and often backs up the waters of Cayuga lake as far as Springport, ... miles distant. This fact is known by the difference in color of the waters of the two lakes. There is a difference of level of the two lakes of 63.4 feet, and the channel joining them is only 20 miles long. The lake is deeper, and has a more regular bottom, and everything tends to prove that the waters of Seneca lake arrive at the outlet as soon as those from Ithaca do, and hence a set-back is inevitable. The waters rise very quickly at Ithaca, and subside very slowly; this also goes to show that the waters of Seneca and Crooked lakes arrive at the outlet before those coming into the lake at Ithaca do. The highest mark is reached at Cayuga three or four days after the highest point is reached at Ithaca, and when the level at Ithaca is at a stand-still. This stream also brings down much silt and deposits it at the lower end of the lake, thus making it more shallow every year, and forming an extensive bar right across the mouth of the Seneca river. Its effects are easily seen in Plate III in the vertical cross section

of the lake; it being less than 10 feet deep at Cayuga, and only from 4 to 5 feet deep at the point where the river leaves the lake again. With a rainfall of two inches in twenty-four hours, we would have as coming into Cayuga lake from Seneca and Crooked lakes 24,200 cubic feet a second, which is a considerable volume, and would fill up the end of the lake fast, as the river can carry only 10,800 cubic feet a second, and so would produce high water immediately. Hence we think it is plain that the Seneca river flowing into Cayuga lake does produce a set-back of the waters of Cayuga lake, and also a tendency to form a large and progressive bar at that end, right in front of the outlet. Configuration of lake not favorable to rapid flow of water from Ithaca to the outlet. Treating the bars in the lake as submerged dams, the conclusion is reached that the water in the southern end of the lake must be 1.4 feet higher than in northern, to pass two inches of inlet channel, also too narrow.

Before the Board of Canal Appraisers. Claim of F. M. Finch.

Specific acts. (1.) Embankment of Erie canal across marshes at Montezuma closed up in 1856 the entire Canandiagua channel— 16 feet deep and 70 feet broad. (2.) This embankment obstructed and shut up a waterway over the marshes nearly 6 miles wide where before 1856 freshets and high water were easily and rapidly carried off. (3.) All water from Canandaigua has been turned into Seneca at right angles, and hinders flow in Seneca. (4.) Aqueduct is an obstruction, the water backing up on it from 6 inches to 3 feet. (5.) Water from canal, 4,000,000 cubic feet a day poured into river from Erie canal. All except the overflow from the lower side of the aqueduct trunk comes in above the aqueduct. (6.) Narrowed Seneca channel at Mud lock to 244 feet.

All witnesses agree that prior to 1857 the water did not set back on the village of Ithaca. But ran off in a few hours; not to exceed a day or two.

The year 1857 — the first year of the completion of the State works at Montezuma, is the beginning of the persistent high water which has drowned out the western part of the village of Ithaca. Before these works were constructed all the witnesses agree that beyond the ordinary brief and casual overflow of the mountain streams — lasting but for a day or two — rapidly running off — affecting nothing but a small area — doing but trifling

injury and scarcely attracting serious attention — there was no high water of any consequence. But after the works were constructed the lake was backed upon the low lands, high water and destructive overflow became continuous, lasting whole seasons and utterly destroying the value of property — lands before untouched were drowned — extraordinary water levels were reached, the danger and destruction became so great that the community were alarmed, public meetings were called and committees were sent to the outlet to examine the obstructions that were doing the mischief. All the witnesses agree that before 1857 the water did not set back from the lake, and whatever spring freshets occurred passed off rapidly and did no injury.

Dowe. Previous to that time (1857), I had never seen the water near as high as it was then. A public meeting was called to take these matters into consideration, and a committee was appointed to examine into the cause of the high water. Before 1857 I have seen the flat lands partially overflowed, but not to the same extent as in 1857. I cannot tell much about it prior to 1857, as my attention was not called particularly to it.

Humphrey. The freshets of 1857, 1865 and 1870 were the highest I have ever known. There are certain portions of the flats that are more or less covered when we have our usual spring freshets. From 1836 down the flats have never been submerged so long as in 1857.

Selkreg. Previous to the year 1857 we had no freshets which raised the water and kept it up over from twenty-four to forty-eight hours.

Williams. I first came here in 1825. When I came here the most of the flat lands up to the village were covered with timber except places cultivated. There are places where I have seen crops of corn growing on these lands near the lake. There was a place near the west shore not far from lake on the west side of the inlet. They have been too wet of late years to be cultivated. From 1840 to 1856 the water did not usually remain over a day or two prior to the enlargement of the Erie canal and the building of the aqueduct. I do not know that it was ever under water more than a day or two. As a rule previous to 1857, the water disappeared in a very short time. The water since 1857 has covered the flats more continually and remained longer. Never knew anything prior to 1857 with what we have had since as to desolation and

———. Since 1857 I have noticed a general higher level of the water in the lake and over low lands than before, and I account for it by the obstructions caused by the State works at Montezuma.

Day. Previous to 1857 the water would flow off rapidly and soon dry off; since that time they have been more continually overflowed. Conflicting statements as to height of water on aqueduct trunk on upper and lower sides. Vary from 1 inch to 6. Total height on upper side, 3½ feet.

E. Cornell, on Sodus canal:

The State is now discharging from the Erie canal an average of 4,184,523 cubic feet of water per day into the Cayuga marshes during the entire season of navigation of 224 days. Chemung canal, 1,000,000.

From letter of H. T. Beach, division engineer, November 24, 1890:

The various improvements to the channel of the river by dredging were as follows:

In 1862–3, bar No. 11, beginning in deep water, 6,400 feet above New York Central railroad bridge, 5,300 x 50 x 5 feet and 1,100 x 30 x 5 feet. (Bottom of cut ½ foot below bridge foundation.) Below New York Central railroad bridge, beginning at bridge and running to deep water, 2,100 feet long, 60 x 4 feet at top and 30 x 2½ feet at bottom. (Bottom of cut, 6½ feet below original and 2 feet below foundation of bridge; channel under bridge was excavated to top of foundation when bridge was built.) At head of bar No. 10 (1 mile below New York Central railroad bridge), 1,100 x 30 x 5 and 500 x 30 x 5 (begins in deep water and ends in bar). Bar No. 9, Campbell's island (about 3 miles below New York Central railroad bridge), 2,100 feet long; central portion, 200 feet x 30 x 3; remainder, 40 x 4½ (runs from deep water above to deep water below). Bar No. 7, Mosquito point (6 miles below New York Central railroad bridge), 1,200 x 100 x 3½ and 1,000 x 30 x 4½ (runs from deep water to deep water). Bar No. 5, Hickory island (9½ miles below New York Central railroad bridge), 1,700 x 60 x 8 and 400 x 30 x 3, (from deep water to head of bar below).

Proposed in 1872. (I do not find the final account, but think the work was completed, except at bar No. 1.) Bar No. 11 (above New York Central railroad bridge), complete to give channel 6,400 x 50 x 6½ from deep water to bridge (bottom of cut 2 feet below top of bridge foundation). Below bridge (from bridge to deep

water) complete to give channel 50 feet wide on bottom 2,100 x 6½. Bar No. 10 (1 to 2 miles below New York Central), channel widened and completed from deep water to deep water to give 9,700 x 40 x 5. Bar No. 9 (— miles from New York Central), complete to give 2,200 x 45 x 4½. Bar No. 8 (4 miles below New York Central), 400 x 40 x 4½. Bar No. 7 (6 miles below New York Central), complete to 2,200 x 100 x 6. Bar No. 5 (9½ miles below New York Central), lower part already done to deep water so as to give 1,700 x 60 x 8, 400 x 60 x 3 and 1,800 x 40 x 5. Bar No. 3 (13 miles below New York Central), 500 x 40 x 3. Bar No. 2 (Bonta's bridge, 14 miles below New York Central), 1,700 x 40 x 3. Bar No. 1 (15 miles below New York Central), 600 x 40 x 3.

REPORT

ON

Cause of Sickness at Springwater.

ALBANY, *June* 30, 1890.

TO JACOB SNYDER, Esq., *Supervisor and President Board of Health, Springwater, N. Y.:*

SIR.— In answer to a petition received sometime since from residents in Springwater, which set forth the fact that owing to the raising of Hemlock lake for the water supply of the city of Rochester, the flats below your village were more or less submerged and malaria had resulted, in company with Mr. C. C. Brown, civil engineer, I visited Springwater, Friday the twenty-seventh, and ascertained the following:

That the inlet of Hemlock lake was, in former years, a more swift flowing stream than at present; that now it is higher, is sluggish in flow in its lower portion, and in consequence more marsh land has been created than formerly. This, by the citizens of Springwater, is considered to be due to the outlet of Hemlock lake being obstructed by the authorities of Rochester and the lake level thereby raised, the object of this raising to be the storage of water for the city's use. Last autumn an outbreak of some twenty to thirty cases of sickness, considered to be due to this cause, was noticed in Springwater. None of the cases resulted fatally.

Dr. Conners, one of the oldest physicians residing in Springwater, detailed the history of the outbreak as it came under his notice, and gave the description of typhoid fever of a mild form. The doctor considered malaria to be also present. Dr. Mallory, of Rochester, who saw several of the patients with their attendants, considered the disease typhoid fever, and the notes he took at the time give the history of that disease. I understand Dr. Boon, another of your physicians, states he had several of those ill under his care, and all were suffering from typhoid fever.

An exhaustive analysis of the well water of the village, generally used by the inhabitants, by Dr. Ernst, of Boston, shows sewage contamination, and in some instances the typhoid germ.

It appears from inspection that the house wells, placed as they are on a hill-side, have above them privy vaults and stables; that the soil is porous in character, and therefore every chance is given for the contamination of the ground-water supplying the wells by seepage from vaults and manure piles.

Inspection shows the lake level to be considerably higher than normal, and the inlet for about half a mile above the lake to be affected by this rise, the surrounding flats being more or less wet and boggy. But it is also stated that the two years past have been unusually wet, and that in dry seasons the lake level is lower. Inspection at the foot of the lake, from which point the city of Rochester draws its water supply, showed over a foot and a half of water flowing through the original outlet and nearly as much through an artificial outlet made by those in charge of the water-works. Nine million gallons, daily, of water are also stated to be drawn off through the supply pipe, thus making three outlets to the lake, or more than doubling the amount of the old discharge. The law allowing Rochester the right to draw water from Hemlock lake, also confers the power to raise the lake level two feet and to draw it down eight feet below the normal level or the bottom of the outlet, thus giving ten feet range. (Chapter 754, Laws of 1873.) But the privilege of storing water has never been used by the city, as is shown by the records, the necessity not having arisen, while the level at times has been drawn down about five to six feet.

It is claimed that by making an artificial outlet, the natural one has become filled up, and as the flow through the latter is under command, as much water can not leave the lake as in former years. In offset to this, the chief engineer of Rochester stated care was taken to keep the old outlet in proper condition, and that it was regularly cleaned out whenever any apparent deposit was noticed.

On further examination it was found that a dam was built on the outlet, a mile and a half below the lake, for mill purposes. That this dam set back the water to within a short distance, less than half a mile, of the lake, and as no obstruction was placed at the mouth of the outlet, as the artificial outlet was open a few

inches above the level of the bottom of the original one and the city was daily drawing through its pipe a large amount of water, the maintenance of the high lake level could only be due to the maintenance of this dam on the outlet stream. This dam is not owned or controlled by the city of Rochester.

I am of the opinion that the sickness of last fall was not due to the wet condition of the lowlands below the village; that it was not malarial but typhoid fever, due to other causes than the one assigned by the residents. It is suggested as a guard against future outbreaks, that the privy vaults in the village be done away with, that what is known as the "pail system" be substituted, and that great care be taken to prevent contamination of the village well water from other sources. It is further suggested to the Rochester authorities, that for the better protection of their water supply, they consult and arrange with the village as to the manner of carrying out the above change. A copy of this letter has been sent to the chief engineer of the city.

Very respectfully, your obedient servant.

LEWIS BALCH,

Secretary.

REPORT

ON

Cause of Diphtheria at Newburgh.

NEWBURGH, N. Y., *November* 3, 1890.

Secretary State Board of Health:

SIR.—At a meeting of the board of education held November 1, 1890, I was directed to ask the State Board of Health to send an expert to this city to inquire into the sanitary condition of grammar school No. 3, to investigate as to the origin and means of dissemination of diphtheria in Newburgh and to report if there is any reasonable cause to suppose that this building has been the source of danger or is in such a condition as to endanger the life or health of its pupils. An early reply is urgently requested as we are hopelessly at variance with our local board. I will endeavor briefly to explain the situation. Diphtheria has prevailed in Newburgh about two and one-half years. The past year there have occurred in all parts of the city between fifty and sixty cases, of a mild type, in every month. School No. 3 has near 500 pupils. In fall of 1888, fifteen cases occurred in pupils attending this school, seven in one class including teacher were attacked about the same time. One of these pupils was complaining for several days before she left school and to her we attribute the other cases. The disease spent its force in about two weeks. During the last two years there has been no trouble until September of the present year. Case No. 1 occurred September thirteenth; No. 2, October fifteenth; No. 3, October sixteenth; No. 4, October twentieth; No. 5, October twenty-eight.

These cases are all mild, and I believe have all recovered. September eighteenth a younger brother of No. 1 was attacked. October eighth No. 1 returned to school, twenty days after his brother was taken sick, and not more than two weeks after

his recovery. October fifteenth case No. 2 occurred in the same room to which No. 1 returned. This was followed by cases 3, 4 and 5, October sixteenth, twentieth and twenty-eighth.

The sanitary conditions of the building are practically unchanged. The closets are the same as are in use in three other buildings, two much larger than this. The building draws its pupils from a section in which the disease prevailed most extensively during the summer of 1888, when the schools were closed and the epidemic was at its height.

No effective measures have been adopted by our local board for the isolation of the sick, the disinfecting of rooms, the cleansing of bed-clothes, the clothing or persons of patients.

We are directed by our local board, on the ground that the building is the source of danger, to construct temporary vaults in school yards, and then to make such other changes as may be decided upon.

We will not construct out-door privies for the use of 500 children. We claim that the circumstances point to contagion only as the cause of disease in the schools; that the outcome would have been very different had it resulted from an unsanitary condition of the building itself.

At a conference meeting with board of health we offered to submit the whole matter to State board. Our local board disagrees. Therefore, we ask, on our own behalf, an investigation by an unbiased expert. We are willing to abide by the result.

Yours, respectfully.

R. V. K. MONTFORT, M. D.,
Superintendent.

ALBANY, *November* 7, 1890.

To R. V. K. MONTFORT, Esq., *Superintendent Board of Education, Newburgh, N. Y.:*

SIR.— Your communication of the third instant was received and contents carefully considered. On the return of the secretary to the city I will lay it before him for action.

Very respectfully, your obedient servant.

FRED'K CARMAN,
Assistant Secretary.

OFFICE OF THE BOARD OF HEALTH,
NEWBURGH, N. Y., *November* 7, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.— At a meeting of our board of health held October 29, 1890, the following action was taken in regard to one of our city schools:

"WHEREAS, The board of health of the city of Newburgh are of the opinion that the bad sanitary condition of the Third Ward Grammar school is the probable source of considerable diphtheria among the children in attendance upon the said school; therefore,

Resolved, That the board of health hereby order that the present water-closet, located in the basement of the said school building, be abandoned after ten days time, and suitable temporary privy vaults constructed in the yard of said property, preparatory to making further permanent improvements; work to be done under the supervision of the health officer and subject to the approval of the board of health.

Resolved, That the entire board of health be constituted a committee to confer immediately with the board of education, in order to ascertain what sanitary improvements are necessary to be made for the purpose of putting said school building in good, safe and proper sanitary condition; also,

Resolved, That the health officer be instructed to wait upon the president of the board of education for the purpose of making an appointment to hold the conference between the two boards as above recited."

The conference with the board of education was held on Saturday evening without accomplishing anything.

The board of education claim that the sanitary condition of said school building is perfect, and refuse to carry out the directions of the board of health.

After the adjournment of the conference meeting of the two boards on Saturday evening, the board of education again convened and took action, instructing the clerk of said board to request the State Board of Health to send a sanitary expert here to investigate and determine in regard to the sanitary condition of said school building.

Will you kindly advise our board of health through me of the time when such expert will visit Newburgh for the purpose named.

Very truly yours.

JAMES GORDON, M. D.,
Health Officer.

ALBANY, *November* 8, 1890.

To JAMES GORDON, M. D., *Health Officer, Newburgh, N. Y.:*

SIR.—I am in receipt of your communication of the seventh instant, transmitting the resolution of your board of health in reference to the sanitary condition of the Third Ward Grammar school, and requesting the State Board of Health to send a sanitary expert to investigate and determine in regard to the sanitary condition of said school building.

We have also received a similar request from the board of education. I would like to be first informed if you are willing to defray the charges and expenses of the experts. It seems to me the school should be examined both from the point of view of an expert physician and also from the point of view of a thoroughly competent sanitary engineer.

Awaiting your reply, I remain,

Very respectfully, your obedient servant.

LEWIS BALCH,
Secretary.

REPORT OF DR. CURTIS.

Dr. LEWIS BALCH, *Secretary State Board of Health:*

SIR.—November eighth, requests came to this office from both the board of education and the board of health of the city of Newburgh, that a representative of this board make an inspection of a school building and its connection with the spread of diphtheria there prevalent during the last few weeks. This building had been declared to be in a bad sanitary condition by the board of health and certain things ordered; objection to these things was made by the board of education, and a conference of the two boards accomplishing nothing, the advice of the State Board of Health was asked for.

Professor C. C. Brown, C. E., who went with me, will report upon the condition of the school building; I will speak only from the medical side of the case.

The records of mortality of Newburgh, kept in the State Board of Health office beginning in April, 1884, show the occasional occurrence of the disease from that time, four deaths being

recorded in 1884 from diphtheria. In 1885 there were a few deaths early in the year, but a more active prevalence began in August and continued through the year, twenty-seven deaths in all occurring. In 1886, there were no deaths until towards the end of the year when within a short time ten deaths occurred. In 1887 there were but four deaths, occurring mostly also in November and December. This continued on into 1888, in every month of which deaths occurred from diphtheria, there having been seventy-one in all. In 1889 there were also deaths every month, thirty-two occurring during the year and during 1890 there have been thus far twelve deaths reported.

There has been no year in which there have been no deaths from diphtheria, a considerable prevalence having occurred in 1885, and a more extensive and constant one beginning towards the close of 1887 and continuing to some degree up to the present time.

It thus appears that diphtheria is not new to Newburgh, since for five years at least the city cannot be said to have been free from it, over 150 deaths having occurred within that time. It has appeared to have been more prevalent in the fall months, a fact, however, which is commonly noted in all communities.

As to distribution, I believe it has not been specially limited to any locality, but has appeared in various parts of the city. I was told that it prevailed most extensively among the tenement-houses, and lingered longest in habitations that were faulty in regard to cleanliness and sanitary conditions. This would be expected.

An inquiry into the origin and causes of development of diphtheria in a locality, and the reasons for its lingering there, must be based upon the now commonly accepted facts regarding the nature of the disease before the bearing of a special alleged cause can be estimated. And it is particularly important, as in the present case, to take into consideration all possible causes for the chronic continuance of an epidemic, and to apply the remedy, not limiting the inquiry to a single one.

As Mr. Brown has made an investigation of the school building, which is the subject of accusation, although I went through it myself, I will leave a report upon it to be made by him.

The first and the *important* point is that diphtheria is a disease that spreads by contagion. It is contracted by taking into the

system a material of disease developed by a pre-existing case. It may be taken by coming into direct contact with the sick, or just as readily from some article which has become infected by contact with them, and in fact the latter is more commonly the case. It is very improbable that it is ever contracted in any other way. While it is perhaps not many years since this became an accepted fact in the minds of sanitary observers, it is now universally believed that without a pre-existing case diphtheria will not occur. It is most desirable that this fact should be instilled into the populous mind; the people should be educated into the knowledge that every case may communicate the disease to others coming near it, and that it will inevitably render infectious every article that comes into contact with it, which articles will retain their infectiousness for a long time unless disinfected, and will carry the disease wherever they may be transported.

What bearing, then, has an unsanitary condition upon the development of diphtheria; can it arise from accumulations of filth or from polluted air? This is the question that at once arises in the public mind, and almost invariably in the epidemics coming to the notice of this board it is found that the attention of the community is being attracted to a source of this character. Now if it is true that diphtheria arises only from a pre-existing case of the disease, it is evident that it cannot originate from air or matter, however otherwise polluted unless there has been implanted some of the disease material developed from a case of the disease. I must not fail to emphasize that unsanitary conditions *favor the propagation* of these disease germs, and that they thrive for an indefinite length of time in them. This is the reason why it is necessary to clean up or, as in the case of sewers which especially favor the growth of these germs, that domiciles should be protected thoroughly from the entry of polluted air; but bad air, minus diphtheria germs, will not cause diphtheria.

The relation of a school building to diphtheria is always an important one. It is the gathering place for the large proportion of those of a community susceptible to the disease. From what has been said it is apparent that it will be a contributory medium for spreading diphtheria only either by the importation of the germs of the disease by some infected person or article; or in some damp, filthy, unventilated spot about the building the germs have become implanted and cultivated and given off; untrapped

drains leading to a diphtheria-infected sewer will also bring them in. I do not think either of these latter conditions exist. The building seems to me to be in a sanitary condition, free from dampness and filth, well-fitted with drainage arrangements and connections. The children, as I saw them in session, seemed generally healthy and were so reported by the teachers. There is a chance for importation of the disease in every school, but very well considered efforts are being made by the superintendent, who is himself a physician, to keep out of school all children or articles from houses where sickness exists, and he should be aided by all officials who have to do with the matter and by custodians of children.

The people should also aid the board of health in their efforts to drive out diphtheria from Newburgh. It can only be done by rigidly isolating the sick from the well and thorough destruction of the germs of disease generated by them. People do not appreciate the difficulties in the way of the energetic enforcement of these things by the executive officer of a health board unless he has popular indorsement. If the quarantine can not be enforced in the home of the patient, and often this is difficult among tenement-house people, a contagious disease hospital should be provided. An effective quarantine and systematic disinfection will rid Newburgh to a large degree of a disease which has caused a considerable mortality for years.

Yours respectfully.

F. C. CURTIS.

REPORT BY CHARLES C. BROWN, C. E.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, *November* 17, 1890.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I have the following report to make of my inspection of the sanitary condition of school No. 3, in the city of Newburgh:

The school is an old one, having been built in 1866, and is not up to modern ideas of the best construction for school buildings, but it is kept in good condition, and apparently all possible effort

is made to keep it clean and to manage it in such a manner as to produce the best possible results. Aside from the general design, which cannot be changed except by entire reconstruction, and which is not exceedingly objectionable, I found but two or three points of special criticism. These points are matters of detail, and with the present methods of taking care of the building but two of them are out of control, and these two the least important. I wish to say distinctly that none of these details are, under the present circumstances and care, of the least effect, in my opinion, in producing diphtheria, and that the building is not more favorable to the spread of the disease from pupil to pupil than other public buildings in which there is opportunity for personal contact between infected persons and others. There is no reason for a panic concerning the condition of the building, and so long as the present methods of taking care of the disease in the city are in vogue, it is no more conducive than any other building in which children congregate to the spread of the disease.

The points which I shall mention as requiring attention are the following:

1. The rain-water leaders on the east side of the building enter the drain from the building on the sewer side of the trap. This makes them, to a certain extent, ventilators of the sewer. Were the joints tight and the upper ends carried above the roof at its highest point, this would be a great advantage to the building, for I understand that the outlet to the main sewer is in such position that with certain winds there is a heavy pressure in the sewers, which will force traps not vented on the sewer side. It is probable, therefore, that these leaders have saved the forcing of the trap, and the consequent entrance of sewer air into the building. However, the joints of the leaders are not tight, and cannot be made permanently so of their present material, and they open at the eaves of the building. Therefore, I would recommend that an independent vent of cast-iron pipe, thoroughly leaded and caulked so that the joints shall be air-tight, be put in to extend above the top of the roof about four feet, and that the rain-water leaders be discharged into the drain on the house side of the trap. It may be necessary to put in a trap outside the house. I do not know the position of the present trap.

The best practice would carry the soil pipe to the roof in the same manner, each connection being independently trapped.

2. The principal method of ventilation of the boys' water closet is a window on the south side of the house. One of the cold air ducts of the heating apparatus opens in the next window. There is some chance therefore for odors from the closet being drawn into the flues and distributed through the building. With the present method of taking care of the closets, as shown by the condition of the closets on the day of my visit, these odors will not arise to any great extent from decomposing matter, but they are disagreeable and possible accompaniments of dangerous matter, so that it is necessary that the present proximity of the two openings be changed. This can be effected by putting up a close partition on the outside of width and height sufficient to make the dispersion and dilution of the air from the closet certain before it is drawn into the air duct.

3. The ventilation of the closets is unsatisfactory. In the case of the boys' closet it consists of the open window spoken of and a small opening in the wall near the ceiling, leading to the girls' closet. That of the girls' closet consists of three windows and a six or eight inch opening into a flue in the west wall of the building. There is but little opportunity for air from the boys' closet getting up into the building through the door of the boys' closet as it does not communicate with any passage up stairs, and the boys enter it immediately on coming into the basement hall from out of doors. The door of the girls' closet opens into a hall which communicates directly with the west side stairway. While there is a spring on the door, it is open often and is not tight. It is probable, also, that the ceiling and walls are not air-tight and allow the passage of air from the room to the upper floors. While the closets are probably kept in the best possible condition it is hardly possible that odors from them will not arise to the rooms above and if a less careful man should be given charge of them a considerable nuisance would probably soon arise. I would recommend therefore a thorough reconstruction of the ventilating arrangements of the closets. This should be equivalent in effect to making a room with practically tight walls and ceiling, and ventilating shaft or shafts of sufficient area and with proper arrangements for forcing an upward draft therein to draw all air up them and give no opportunity for back drafts when doors or windows are opened. The ceiling would be well arranged to slope up towards the opening of the shaft. It is needless to say

that the shaft should be air-tight and not be a smoke flue. It is not necessary to stop the use of the school building while this work is in progress nor are the pupils in danger if the work is not completed in a day or two, if the building is kept at all times in as good condition as it was at the times of our visits, but I think it should be proceeded with without delay upon general sanitary grounds and to prevent any possibility of trouble under less favorable conditions, which are bound to occur at times.

I will not mention in detail the troubles with heating and ventilation as they are fully understood by the authorities and they are doing as much as they can to alleviate the existing conditions. The number of pupils in a room should be kept as small as possible until the ventilating arrangements are entirely changed.

Respectfully submitted.

CHARLES C. BROWN, C. E.

Report on Diphtheria at Glens Falls.

Report of Dr. Chase.

Dr. Lewis Balch, Secretary of State Board of Health:

Sir.—The immediate cause for a request for consultation with the State Board of Health from the board of health of Glens Falls, was regarding the propriety of quarantining and fumigating certain premises on account of diphtheria. Difference of opinion existed between the health officer and attending physicians as to the diagnosis of the cases of sickness, one of which had been reported as membranous croup which had proved fatal and was soon followed by a second case of sore throat in the person of an adult, nearly recovered at the time of my visit, November eighteenth. Without going into detail regarding the case, I would report that I regarded, from such evidence as I could obtain, the cases sufficiently suspicious to make it unsafe to suspend the quarantine established by the health officer or to dispense with the subsequent measures for disinfection of the premises.

I may say, that Glens Falls has for a long time been free from diphtheria until early in this present year. It then appears to have been imported by a case traced with some reasonable degree of evidence from New York. Since then the health officer reports that sixty-one cases have occurred, about one-third of them having been fatal. These include some cases reported as membranous croup, and perhaps some cases concerning which there might be doubt, under other circumstances, as to their being cases of sore throat with non-diphtheritic deposit.

It is commonly the case during the course of an epidemic prevalence of diphtheria, for cases of sore throat to occur, which, in the absence of diphtheria, would not be regarded as diphtheritic. I have no doubt that they may have an infectious quality and should be treated as suspicious and isolated as carefully as if they were typical cases of diphtheria, and, as a matter of fact, the continuance of a diphtheria epidemic is largely maintained, I

believe, by the mild and perhaps unobserved cases which escape restriction and mingle freely with susceptible individuals. In the same way, under these same circumstances, membranous croup should be regarded as identical with diphtheria.

There is only one way to stop the spread of this disease, and that is to isolate every case until it is fully recovered, and after it to destroy all germs of the disease generated by them. The health officer of Glens Falls understands this perfectly and is seconded in his efforts to restrict it by the village board of health. He should receive the co-operation of the physicians of the place and of the citizens generally. If there is doubt regarding the diagnosis of a case the benefit of the doubt should be given to the public. It ought to be possible to prevent the long continuance of an epidemic in a place which gives such facilities for its control as exist in Glens Falls.

Respectfully yours.

F. C. CURTIS.



OPINIONS OF ATTORNEY-GENERAL.

OPINION OF ATTORNEY-GENERAL

ON

Power of Board of Health to Lay a Drain or Sewer in a Public Street, Which is the Only Means of Abating a Nuisance Which is Dangerous and a Menace to the Public Health, After Having Duly Requested the Authorities of Such City or Village to Abate Such Nuisance, and a Refusal Upon Their Part so to do.

STATE OF NEW YORK:

ATTORNEY-GENERAL'S OFFICE,
ALBANY, N. Y., *September* 24, 1890.

LEWIS BALCH, M. D., *Secretary of State Board of Health:*

SIR.—In reply to your verbal request for my opinion as to the power of a local board of health to lay a drain or sewer in a public street, which is the only means of abating a nuisance which is dangerous and a menace to the public health, after having duly requested the authorities of such city or village to abate such nuisance, and a refusal upon their part so to do, I beg leave to state as follows:

By chapter 270 of the Laws of 1885, the organization of local boards of health is provided for, and when organized they have the power (section 3, subdivision 4) "to receive and examine into the nature of complaints made by any of the inhabitants, concerning nuisances, or causes of danger or injury to life and health within the limits of its jurisdiction; to enter upon or within any place or premises where nuisances or conditions dangerous to life and health are known or believed to exist, and by appointed members or persons, to inspect and examine the same; * * * and every such board of health shall have power, and it shall be its duty, to order the suppression and removal of nuisances and conditions detrimental to life and health found to exist within the

limits of its jurisdiction;" and (by subdivision 6): "To make, and from time to time to publish, in such manner as to secure early and full publicity thereto, all such orders and regulations as they shall think necessary and proper for the preservation of life and health and the successful operation of this law; and to make, without publication thereof, such orders and regulations in special or individual cases, not of general application, as they may see fit, concerning the suppression and removal of nuisances, and concerning all other matters in their judgment detrimental to public health, and to serve copies thereof upon any occupant or occupants, and the owner or owners of any premises whereon any such nuisances or other matters aforesaid shall exist, or to post the same in some conspicuous place on such premises."

(Subdivision 8.) "To employ all such persons as shall be necessary to enable them to carry into effect the orders and regulations they shall have adopted, and the powers vested in them by this act, and to fix their compensation."

(§ 4.) " * * * And in case of non-compliance with any order or regulation which shall have been served or posted, as provided in subdivision 6 of section 3 of this act, the said board or its servants or employés may lawfully enter upon any premises to which such order or regulation relates, and suppress or remove the nuisance or other matters in the judgment of said board detrimental to the public health mentioned in such order or regulation, and any other nuisance or matter of the description aforesaid found there existing, and the expense thereof shall be a charge upon the occupant or any or all of the occupants of said premises, or upon the person or persons who have caused or maintained the nuisance or other matter of the description aforesaid, and may be sued for and recovered with costs by said board, in the name of such board in any court having jurisdiction."

§ 5. "All expenses incurred by the several boards of health in the execution and performance of the duties imposed by this act shall be a charge only on their respective cities, villages and towns; and shall be audited, levied, collected and paid in the same manner as other city, village and town charges are audited, levied, collected and paid."

These provisions, it seems to me, give local boards of health ample power to abate nuisances, and if there is an existing nuisance dangerous to health in a street, and the city or village

authorities refuse to abate the same, it is the duty of the board of health to abate it, and I am of the opinion that, if the authorities of the city or village, after having been properly served with an order to abate the nuisance, refuse or neglect to so do, the board of health may abate it, and if the laying of a sewer be the only safe and proper means of abating such nuisance, they may lay such a sewer, and may charge the expense thereof to the city or village, the city or village being the occupant of the street, within the meaning of the word as used in the act above referred to. (Gould v. City of Rochester, 105 N. Y. 46.)

The expenses of the board of health in laying such sewer should be audited, levied, collected and paid in the same manner as other city or village charges are audited, levied, collected and paid.

Very respectfully, your obedient servant.

CHARLES F. TABOR,
Attorney-General.

OPINION OF ATTORNEY-GENERAL

on

Duty of Clergymen and Magistrates to Return Marriage Certificates Properly Filled Out to Registering Officer.

Chapter 322 of the Laws of 1880 established a State Board of Health and conferred upon it certain powers.

Section 7 provides that "it shall be the duty of the State Board of Health to have the general supervision of the State system of registration of births, marriages and deaths, and also the registration of prevalent diseases. Said board shall prepare the necessary methods and *forms* for obtaining and preserving such records and to insure the faithful registration of the same in the several counties and in the central bureau of vital statistics at the Capitol of the State."

Chapter 270, Laws of 1885, provides for the formation and organization of local boards of health in the different towns, villages and cities of the State, and confers upon said boards certain powers. Among these powers are those contained in subdivision 5 of section 3, which provides as follows: "To supervise and make complete the registration of all births, marriages and deaths occurring within the limits of its jurisdiction, in accordance with the methods and forms prescribed by the State Board of Health, and to secure the prompt forwarding of the certificates of birth, marriage and death to the State Bureau of Vital Statistics after local registration, * * * and to secure the completeness of the said registration, it shall be the duty of the parents or custodian of every child, *and the groom at every marriage, or the clergyman or magistrate performing the ceremony,* to secure the return of the record of such birth or marriage to the board of health, or person designated by them, within thirty days from the date of such birth or marriage, and

each record shall be duly attested by * * * the clergyman or magistrate officiating at such marriage."

It will be observed by these provisions, that it is first the duty of the State Board of Health, and it is given the power, to prepare the necessary methods and "forms" to insure the faithful registration of marriages, and that it is also made the duty of local boards of health to supervise and make complete the registration of marriages, in accordance with the methods and "forms" prescribed by the State board, and that it is also made the duty of the groom at every marriage, or the clergyman performing the ceremony, to return within thirty days the record of such marriage to the person designated by the board of health, and it is the duty of the clergyman to attest the certificate.

The "form" of the certificate, that is, the facts to be stated therein, is passed upon by the State Board of Health, and it is for that board to say what facts will give the necessary information as to the performance, etc., of the marriage ceremony, and in accordance with this power and duty the State board has prepared and furnished a certain form of certificate, which, when filled out, will contain all, and no more than the board considers necessary to be stated, in order to give the information contemplated by the acts above referred to.

It is not for the person performing the ceremony to say what he in his judgment, considers a necessary certificate, or for him to furnish simply what he considers the necessary information. That is a matter which the State Board of Health determines upon, and for that reason the State board is required to prepare the forms for the purpose of insuring proper registration, and it is made the duty of the groom or the person performing the marriage ceremony, to secure the return of the record, properly attested, and containing a statement of the facts designated by the State board, within the time and in the manner prescribed by the statute.

It is true that the statute requires the groom *or* the clergyman or magistrate performing the ceremony to secure the return of the record of such marriage. It is a co-ordinate duty devolved upon each, and it is the duty of each to see that the requirements of the statute are complied with. The groom could not, of himself, without the assistance of the clergyman performing the ceremony, make the return, for the reason that the return must be attested by the

clergyman; nor could the clergymen himself, without the assistance of the groom, make the return, for the reason that the statements contained on the back of the certificate relate to matters only within the knowledge of the bride and groom, and for this reason the statute makes the duty a co-ordinate one, resting upon both the clergyman and groom; and I think it is clearly the duty of the clergyman or person performing the ceremony to see to it, if it lies in his power, that the information contained on the back of the certificate is furnished to the person designated by the local board of health.

Very respectfully, your obedient servant.

CHARLES F. TABOR,
Attorney-General.

N. B.— This opinion applies equally to the duty of physicians and others in reference to birth and death certificates.

OPINION OF ATTORNEY-GENERAL

WITH

Reference to Power of Boards of Health to Fix Compensation of Health Officers and Others.

STATE OF NEW YORK:

ATTORNEY-GENERAL'S OFFICE,
ALBANY, *January* 23, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health:*

SIR.— In reply to your communication of the thirteenth instant, asking me if, in my opinion, the board of town or village auditors, or the auditing boards of cities not exempted from the provisions of chapter 270, of the Laws of 1885, have power to reduce the compensation of health officers, after the same has been fixed by the board of health, and also if they have power to reduce the compensation of other persons employed by boards of health below the amount fixed by said board, I beg leave to state as follows:

Chapter 270, Laws of 1885, provides for the organization of boards of health in towns, villages and cities throughout the State, except in the cities of New York, Buffalo, Albany, Yonkers and Brooklyn, and gives such boards certain powers, among which are as follows:

Subdivision 2, section 3: "To prescribe the powers and duties of the local health officer, who shall act as executive officer of the board; to direct him from time to time in the discharge of his duties, and to *fix the compensation he shall receive.*"

And subdivision 8: "To employ all such persons as shall be necessary to enable them to carry into effect the orders and regulations they shall adopt under the powers vested in them by this act, *and to fix their compensation.*"

Section 5 of this act provides that "all expenses incurred by the several boards of health, in the execution and performance of the duties imposed by this act, shall be a charge only on their respective cities, villages and towns, and shall be audited, levied, collected and paid in the same manner as other city, village and town charges are audited, levied, collected and paid."

It will be observed by these provisions of the statute that the compensation that the health officer is to receive is to be fixed by the board, and also that the compensation of all such persons as may be necessary to enable them to carry into effect the orders, etc., of the board shall be fixed by the board, and when the statute authorizes them to fix the compensation, it can only mean that they shall designate the amount. It does not vest power in any other board to fix such compensation, but expressly gives it to the board of health, and section 5, which provides that all the expenses of the board, under the act, shall be audited, levied, collected and paid in the same manner as other city, village and town charges are audited and paid, does not authorize the boards of auditors of such towns, villages or cities to reverse the action of the board of health in fixing the compensation of the health officer and other persons employed by it. The compensation of the health officer and the other persons employed by the board of health must be "audited" at the amounts fixed by the board, and the whole expense audited, levied, collected and paid in the same manner that other city, village or town charges are audited, levied, collected and paid.

I am of the opinion, therefore, that generally the boards of town and village auditors, and the auditing boards of cities not exempt from the provisions of the act, would have no power to reduce the compensation of health officers appointed by the board of health, or the compensation of other persons employed by them, under subdivision 8, section 3, *supra*.

Very respectfully, your obedient servant.

CHARLES F. TABOR,

Attorney-General.



FOODS AND DRUGS.

REPORT

OF

WILLIS G. TUCKER, M. D., PH. D.,

ANALYST OF DRUGS.

LEWIS BALCH, M. D., *Secretary of the State Board of Health of New York:*

SIR.—The collection and examination of drugs from retail dealers in different parts of the State has been continued under your direction during the past year in substantially the same manner as heretofore. Five hundred and forty-three samples of twenty-six different pharmacopœial drugs, preparations and chemicals purchased from druggists in thirty-seven places have been examined and reported upon during the year. Reports have been made monthly and these have been accompanied by separate reports on each sample, stating the record number and pharmacopœial name of the article tested, name and place of business of dealer from whom purchased; date of purchase, amount called for, price paid and name of collector. The quality of the article, as determined by the examination made, has likewise been stated, the same standards being employed that have been heretofore used. Concerning these standards I quote from a previous report:

"Samples are classed as of 'good quality' when they fulfill the requirements of the United States pharmacopœia or fall below the same, only in some trifling and unimportant respect; of 'fair quality' if, while not fully up to the pharmacopœial standard, they are evidently neither intentionally adulterated nor decidedly below such standard, and of 'inferior quality,' if clearly adulterated or falsified, lacking in any important constituent, deficient in strength from improper manufacture, partial or complete decomposition or other causes, or containing an undue amount of

impurity. In some cases, through ignorance or intent, a wrong article has been sold or some inferior article of a nature similar to that called for has been substituted, and such samples have been classed under the head 'not as called for.' Articles like the diluted acids, possessing excessive strength, have been classed under that head. The reports have also stated the respects in which samples not of good quality have been found to be deficient or inferior, and have given such other particulars as have been deemed necessary in special cases." Not having been published elsewhere, these reports are now collected and embodied in this annual report.

All samples have been promptly examined, and especially in the case of articles which may deteriorate on keeping, and reports upon samples have generally been made within a month of the time of collection

SELECTION OF SAMPLES.

As has been stated in previous reports, the object of the work as now carried on is not so much the determination of the proportion of adulterated to pure drugs as found upon the market as to expose actual adulteration, substitution, sophistication and carelessness in the preparation of common drugs and pharmacopœial compounds and to inform the public and caution dealers. Therefore no attempt has been made to collect a great variety of articles, and such as are known to be seldom adulterated or of inferior quality have not been collected, but such substances have been selected as would best test the knowledge, accuracy and integrity of the dealer, and for this reason some rather unimportant drugs have been collected, though none but officinal (pharmacopœial) articles have been called for, and rarely used, or otherwise exceptional drugs have been omitted. Medicinal alkaloids and preparations containing them constitute the department assigned to another analyst and such articles have therefore likewise been omitted in the collection of samples.

NOTIFICATION OF DEALERS.

Notices have, as heretofore, been promptly sent from the central office to all dealers whose samples have been found to be of inferior quality, warning them to desist from the sale of such articles and it is believed that these notices, which have in most cases been gratefully received and cheerfully complied with, have

had a most salutary effect in correcting various errors and abuses. In a number of cases dealers who have received these notices have written to ask for further information which has always promptly been given, or to explain, excuse and in a few cases to deny the sale of samples complained of but in no case has it been shown that any reasonsable cause for complaint existed. The tables accompanying this report, for the second time, give the name and residence of all dealers from whom samples have been collected and state the quality of the article sold.

COLLECTION OF SAMPLES.

The 543 samples examined during the year were all collected under my direction by my assistant, Dr. A. G. Losee, of Albany, and in the following places: Albany, Amsterdam, Ballston, Canajoharie, Castleton, Catskill, Chatham, Cohoes, Coxsackie, Fishkill-on-Hudson, Fort Edward, Fort Plain, Frankfort, Glen Falls, Green Island, Herkimer, Hudson, Ilion, Kinderhook, Kingston, Lansingburgh, Little Falls, Matteawan, Mechanicville, Newburgh, Poughkeepsie, Rhinebeck, Sandy Hill, Saratoga Springs, Saugerties, Schenectady, St. Johnsville, Troy, Utica, Valatie, Waterford and West Troy. In every case a written order has been tendered and this order has given the officinal names of the articles called for and the amount desired. Trivial or common trade names have never been employed and no valid excuse can therefore be urged by the seller for error or substitution in filling orders so explicit. Proper questions that have been asked by dealers have always been answered by the collector and while the fact that the articles were required for State Board of Health examination has not been stated it has never been denied. All samples have been numbered and fully labeled (the original label if attached by the seller being also preserved) and kept a reasonable length of time for subsequent examination, if necessary, in any disputed case.

The following table shows the nature and number of the 543 samples examined and the places where purchased. It has again been observed that the price paid bears little relation to the quality of the article sold, the highest priced samples being frequently of inferior, and the cheapest, of satisfactory quality.

TABLE OF SAMPLES, ETC.

ARTICLES.	PLACE WHERE PURCHASED.																		
	Albany.	Amsterdam.	Ballston.	Canajoharie.	Castleton.	Catskill.	Chatham.	Cohoes.	Coxsackie.	Fishkill-on-Hudson.	Fort Edward.	Fort Plain.	Frankfort.	Glens Falls.	Green Island.	Herkimer.	Hudson.	Ilion.	Kinderhook.
Acetic acid, diluted	7	5	2	2	2	1	3	8	....	1	....	....	....	1	1	....	6	1	1
Bismuth, subnitrate of	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cerium, oxalate of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Chloroform, purified	....	....	1	....	....	1	....	....	....	....	2	....	....	3	....	....	....	....	1
Ether, compound spirit of	....	....	3	....	2	3	3	9	....	1	....	....	....	....	....	....	....	....	....
Ether, spirit of nitrous	....	6	....	3	....	....	....	9	....	....	....	3	2	....	2	3	....	3	....
Ether, stronger	....	....	1	....	2	....	3	....	3	1	3	....	....	3	....	....	1	....	....
Glycerine	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Hydrobromic acid, diluted	....	....	1	1	....	2	....	....	....	....	1	....	....	....	....	....	3	....	....
Hydrochloric acid, diluted	8	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	4	....	....
Iodoform	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....
Iron, syrup of iodide of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Iron, tincture of chloride of	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....
Lime, solution of (lime water)	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Magnesia	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....
Nitric acid, diluted	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Potassium, bromide of	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....
Potassium, iodide of	....	....	....	....	....	3	....	....	....	1	....	....	....	....	....	....	4	....	....
Rhubarb (powdered)	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Saffron (*Crocus*)	....	....	....	....	....	1	....	1	....	1	....	....	....	....	....	....	1	....	....
Santonin	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....
Seidlitz powder	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sodium, bromide of	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	4	....	....
Sulphur, precipitated	....	....	2	....	....	1	....	....	....	2	....	3	1	....	....	3	....	1	....
Sulphur, washed	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	4	....	....
Sulphuric acid, diluted	....	1	....	3	....	2	3	....	....	....	....	....	1	3	1	2	5	1	....
Totals	29	12	15	9	8	15	12	27	9	8	9	6	4	18	4	8	32	6	3

TABLE OF SAMPLES, ETC.— (*Concluded*).

ARTICLES.	PLACE WHERE PURCHASED.																		Total number.
	Kingston.	Lansingburgh.	Little Falls.	Matteawan.	Mechanicville.	Newburgh.	Poughkeepsie.	Rhinebeck.	Sandy Hill.	Saratoga Springs.	Saugerties.	Schenectady.	St. Johnsville.	Troy.	Utica.	Valatie.	Waterford.	West Troy.	
Acetic acid, diluted	4	1	1	....	....	6	7	....	....	4	....	....	1	....	6	1	1	3	76
Bismuth, subnitrate of	....	2	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	5
Cerium, oxalate of	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	2	....	4
Chloroform, purified	3	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	13
Ether, compound spirit of	....	3	....	2	2	4	2	3	....	3	....	....	....	....	....	....	2	3	46
Ether, spirit of nitrous	....	3	4	....	....	....	....	....	....	....	....	8	2	....	15	....	2	3	68
Ether, stronger	4	....	....	2	....	1	3	3	....	....	....	....	....	....	....	....	....	....	30
Glycerine	....	2	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	5
Hydrobromic acid, diluted	....	....	....	....	....	1	....	....	....	....	....	....	....	....	3	....	....	....	12
Hydrochloric acid, diluted	3	....	2	1	....	3	6	....	....	....	....	....	....	....	....	....	....	....	28
Iodoform	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Iron, syrup of iodide of	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	2
Iron, tincture of chloride of	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Lime, solution of (lime water)	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	3
Magnesia	....	....	....	....	....	1	7	....	....	....	2	....	....	....	....	....	....	....	13
Nitric acid, diluted	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	3
Potassium, bromide of	....	1	....	....	....	2	....	....	1	....	....	....	....	....	....	1	....	....	9
Potassium, iodide of	....	....	....	1	....	5	....	....	....	....	....	....	....	....	....	1	....	....	15
Rhubarb (powdered)	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	2	....	4
Saffron (*Crocus*)	3	....	....	1	....	5	4	3	....	....	....	....	....	....	....	....	....	....	20
Santonin	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	4
Seidlitz powder	....	....	....	....	....	....	....	....	....	....	....	....	....	16	....	....	....	....	30
Sodium, bromide of	....	....	....	2	....	3	9	....	....	....	....	....	....	....	....	1	....	....	23
Sulphur, precipitated	....	4	....	....	....	7	....	3	1	3	....	....	2	....	4	....	....	....	37
Sulphur, washed	4	....	....	....	....	1	1	....	....	1	....	3	....	....	....	....	2	....	18
Sulphuric acid, diluted	....	3	3	3	....	5	10	....	1	....	....	7	....	15	....	....	1	....	70
Totals	21	21	10	12	6	44	52	12	6	12	6	18	5	31	28	4	12	9	543

METHODS OF ANALYSIS.

None but pharmacopœial articles having been collected, and the standard or quality prescribed by the Pharmacopœia being the legal standard to which articles included therein must conform, the pharmacopœial tests and analytical methods have been generally followed. In the examination of sweet spirit of nitre the method of A. H. Allen, of Sheffield, England ("Commercial Organic Analysis," 1885, vol. I, p. 150; also Phar. Jour. and Transactions, Feb. 21, 1885, p. 673 and Nov. 21, 1885, p. 440), as slightly modified and recommended by Dr. E. R. Squibb (Ephemeris, vol. III, p. 1195), has been followed, since the method laid down in the Pharmacopœia is not only troublesome, but inexact and generally untrustworthy. It is not claimed for Allen's process that it is *exact* in its results, and the author describes it as a "ready method of ascertaining with considerable approach to accuracy, the strength of such preparations," but it is undoubtedly the most convenient and precise method yet proposed for this particular purpose, and as Dr. Squibb says, in his very valuable and elaborate paper above referred to, it "really leaves little to be desired." It may here be remarked that sweet spirit of nitre made by the present U. S. P. process can never contain the quantity of ethyl nitrite claimed for it in the Pharmacopœia, and this fact has been taken into consideration in rating the samples examined. The U. S. P. process as given in that work from 1820 to 1860 inclusive, gave a product containing in reality about four per cent of real ethyl nitrite, while the process of 1870, according to Dr. Squibb, gave a product of about one-third the strength, and the present process yields a product containing about 2.83 per cent of real ethyl nitrite instead of the four per cent claimed for it. Dr. Squibb has perfected a process, which it is to be hoped will be adopted in the revision of the forthcoming Pharmacopœia of 1890, which gives a product containing five per cent of ethyl nitrite but it has not, as yet, been generally adopted. Many pharmacists neither make their own sweet spirit of nitre nor purchase from manufacturers, but prepare the article from the so-called "concentrated nitre," a preparation not recognized by the Pharmacopœia, by diluting it with alcohol. This may, or may not, according to circumstances, yield a good article and the subject will be again referred to when the samples examined are

described later on in this report. Concerning the other drugs examined it may be said that while exhaustive analyses have not often been necessary at least one quantitative determination has been made in most cases. The examination has in each case been sufficient to determine whether the article deviated in any material respect from the standard of quality prescribed in the Pharmacopœia and more than this has not been deemed necessary.

SUMMARY OF RESULTS.

Of the 543 samples examined there were classed as of

Good quality	218 or 40.2 per cent.
Fair quality	90 or 16.6 per cent.
Inferior quality	182 or 33.5 per cent.
Not as called for	25 or 4.6 per cent.
Excessive strength	28 or 5.1 per cent.

As stated in previous reports these percentages "by no means represent the proportions of good, bad or indifferent drugs on the market and on sale at the stores, since only those articles which were considered likely to be adulterated or known to be frequently of inferior quality were collected. Had samples of drugs and pharmaceutical preparations been selected at random the proportion of pure and good articles would have been very much larger." The samples wrongly sold and reported above as "not as called for" consisted chiefly of common safflower sold for real saffron, and the articles reported as of "excessive strength" were mainly diluted acids which were twenty-five per cent or upwards too strong; in some cases the concentrated acids being dispensed when the diluted were called for.

The following were the articles examined:

DILUTED ACETIC ACID. (*Acidum aceticum dilutum, U. S. P.*)

Seventy-six samples examined of which there were of good quality nineteen; fair, fourteen; inferior, thirty-four, and of excessive strength, nine. Diluted acetic acid should contain six per cent of absolute acid. Samples containing from 5.5 to 7.5 per cent have been rated as good; 4.5 to 5.4 per cent, fair; under 4.4 per cent, inferior, and over 7.5 per cent as of excessive strength. The samples examined varied from 0.80 to 29.80 per cent, and many of them had evidently been prepared without any regard to accuracy, and in some cases the practically undiluted

acid was sold. Omitting the nine samples of excessive-stren the remaining sixty-seven averaged 4.5 per cent. While it is expected that such preparations will be made with scientific cision, gross carelessness in their preparation is entirely i cusable. Diluted acetic acid is employed in the preparatio "spirit of mindererus," and if it is below or above the pre strength this solution will be either too weak or too str neither of which conditions is desirable. The following tables a description of each of the samples:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
1871	December 30, 1889	W. Laycock	Kingston	4.00	Inferior.
1872	December 30, 1889	Van Deusen Bros	Kingston	6.40	Good.
1873	December 30, 1889	Cooper & Hardenburgh	Kingston	10.50	Excessive strength.
1874	December 30, 1889	Spore & Eltinge	Kingston	7.00	Good.
1898	December 31, 1889	Dykeman & Schofield	Catskill	4.50	Fair.
1924	January 29, 1890	C. P. Callen	Glens Falls	6.70	Good.
1952	January 29, 1890	C. F. Fish	Saratoga Springs	4.80	Fair.
1953	January 29, 1890	J. M. Colcord	Saratoga Springs	4.30	Inferior.
1954	January 29, 1890	T. H. S. Pennington	Saratoga Springs	3.20	Inferior.
1955	February 1, 1890	F. Menges	Saratoga Springs	3.80	Inferior.
1965	February 1, 1890	J. H. Westcot	Ballston	5.20	Fair.
1966	February 1, 1890	F. E. Mitchell	Ballston	2.40	Inferior.
1990	February 1, 1890	W. W. Spaulding	Lansingburgh	1.80	Inferior.
2012	March 28, 1890	Wardle & Son	Hudson	3.80	Inferior.
2013	March 28, 1890	J. M. Johnson	Hudson	5.20	Fair.
2014	March 28, 1890	B. Stedman	Hudson	3.90	Inferior.
2015	April 1, 1890	Link & Best	Hudson	4.30	Inferior.
2016	April 1, 1890	Van Tassel & Tobey	Hudson	5.50	Good.
2017	April 1, 1890	Rice Bros	Hudson	4.10	Inferior.
2040	April 1, 1890	Rice Bros. & Baringer	Chatham	5.20	Fair.
2041	April 1, 1890	W. H. Barnes	Chatham	7.00	Good.
2042	April 1, 1890	A. J. Fellows	Chatham	5.20	Fair.
2045	April 2, 1890	J. M. Hawley	Kinderhook	28.80	Excessive strength.
2049	April 2, 1890	P. B. Van Slyck	Valatie	3.40	Inferior.

Dilutep Acetic Acid, U. S. P.— (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent	Quality.
2056	April 2, 1890	J. Van Buren	Castleton	3.50	Inferior.
2057	April 2, 1890	C. W. Knowlton	Castleton	29.10	Excessive strength.
2106	April 23, 1890	Strickler & Schwartz	Poughkeepsie	7.00	Good.
2107	April 23, 1890	Barnes Bros.	Poughkeepsie	4.60	Fair.
2108	April 23, 1890	Doty & Humphrey	Poughkeepsie	3.60	Inferior.
2109	April 23, 1890	C. Westervelt	Poughkeepsie	5.80	Good.
2110	April 23, 1890	A. A. & J. W. Goetchus	Poughkeepsie	2.80	Inferior.
2111	April 23, 1890	Baldwin & Raymond	Poughkeepsie	0.80	Inferior.
2112	April 23, 1890	W. F. Turner	Poughkeepsie	2.40	Inferior.
2137	April 24, 1890	S. Mapes	Fishkill-on-Hudson	27.60	Excessive strength.
2153	April 24, 1890	J. A. Joslin	Newburgh	7.00	Good.
2154	April 24, 1890	E. R. Post & Co	Newburgh	4.50	Fair.
2155	April 24, 1890	L. Y. Wiggins & Son	Newburgh	5.70	Good.
2156	April 24, 1890	J. G. Birch	Newburgh	3.80	Inferior.
2157	April 24, 1890	R. Ennis	Newburgh	4.90	Inferior.
2158	April 24, 1890	F. A. Grenzebach	Newburgh	4.00	Inferior.
2186	June 25, 1890	W. S. Elmendorf	Albany	3.70	Inferior.
2187	June 25, 1890	E. Hardin	Albany	6.90	Good.
2188	June 25, 1890	F. W. Hoffman	Albany	14.60	Excessive strength.
2189	June 25, 1890	W. E. Masten	Albany	3.40	Inferior.
2190	June 25, 1890	G. E. Ferguson	Albany	5.70	Good.
2191	June 25, 1890	C. Van Loon	Albany	4.00	Fair.
2192	June 25, 1890	F. J. Smith	Albany	4.00	Fair.
2261	September 4, 1890	W. Howarth	Utica	2.80	Inferior.

2262	September 4, 1890	W. Blaikie	Utica	6.40	Good.
2263	September 4, 1890	J. W. Cone	Utica	5.50	Good.
2264	September 4, 1890	Luce & Plumb	Utica	4.50	Fair.
2265	September 4, 1890	J. B. McMillan	Utica	3.60	Inferior.
2266	September 4, 1890	T. Monahan	Utica	20.00	Excessive strength.
2281	September 4, 1890	Ogden & Downs	Ilion	5.30	Fair.
2301	September 5, 1890	J. W. Baker	Little Falls	18.80	Excessive strength.
2305	September 5, 1890	W. S. Bellinger	Canajoharie	2.60	Inferior.
2306	September 5, 1890	A. M. Hodge	Canajoharie	2.30	Inferior.
2319	September 6, 1890	C. Whyland	St. Johnsville	15.20	Excessive strength.
2328	October 14, 1890	G. H. Ingraham	Amsterdam	2.60	Inferior
2329	October 14, 1890	Bradford & Dickinson	Amsterdam	3.70	Inferior.
2330	October 14, 1890	E. W. Clark	Amsterdam	6.50	Good.
2331	October 14, 1890	Powell & Gilbert	Amsterdam	6.80	Good.
2332	October 14, 1890	N. C. Becker	Amsterdam	4.10	Inferior.
2370	November 5, 1890	H. M. Sweet	Cohoes	6.50	Good.
2371	November 5, 1890	D. S. Dodge	Cohoes	4.30	Inferior.
2372	November 5, 1890	M. McDermott	Cohoes	4.00	Inferior.
2373	November 5, 1890	W. Brown	Cohoes	4.00	Inferior.
2374	November 5, 1890	P. H. Spillane	Cohoes	3.00	Inferior.
2375	November 5, 1890	J. S. Ten Eyck	Cohoes	5.20	Fair.
2376	November 5, 1890	Archibold Bros	Cohoes	6.40	Good.
2377	November 5, 1890	D. Hermans	Cohoes	4.80	Fair.
2381	November 5, 1890	J. Higgins & Co	Waterford	5.50	Good.
2391	November 10, 1890	S. Hutchison	West Troy	29.80	Excessive strength.
2392	November 10, 1890	J. E. Miller	West Troy	5.60	Good.
2393	November 10, 1890	F. H. Huntley	West Troy	4.10	Inferior.
2396	November 10, 1890	J. E. Grady	Green Island	4.20	Inferior.

Subnitrate of Bismuth—(*Bismuthi subnitras, U. S. P.*).

mined and all found to be free from adulteration and of good qual

Subnitrate of Bismuth, U. S. P.

	OF WHOM PURCHASED.	Where purchased.
0	W. G. Ball	

OXALATE OF CERIUM — (*Cerii Oxalas, U. S. P.*)

Four samples examined, all of which were of fair quality, though none of them conformed strictly to the pharmacopœial requirements. Samples as follows:

OXALATE OF CERIUM, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1980	February 1, 1890	G. H. Whitney	Mechanicville	Fair.
1985	February 1, 1890	W. Barkman	Waterford	Fair.
1986	February 1, 1890	J. Higgins & Co	Waterford	Fair.
1998	February 1, 1890	H. S. Dickson	Lansingburgh	Fair.

PURIFIED CHLOROFORM — (*Chloroformum Purificatum, U. S. P.*)

Thirteen samples examined, of which there were of good quality, eight; fair, four; and inferior, one. The U. S. P. requires a specific gravity of 1.485–1.490 at 15 degrees C. (59 degrees F.). The quality of the purified chloroform now on sale is greatly superior to that formerly upon the market. The following table gives a description of the samples:

PURIFIED CHLOROFORM, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59 degrees Fahr.	Quality.
1868	December 30, 1889	C. F. Roth	Kingston	1.488	Good.
1869	December 30, 1889	E. W. Knapp	Kingston	1.485	Good.
1870	December 30, 1889	F. J. R. Clarke	Kingston	1.485	Good.
1893	December 31, 1889	J. H Vosburgh	Catskill	1.486	Good.
1915	January 29, 1890	R. N. Peck	Glens Falls	1.488	Good.
1916	January 29, 1890	J. L. Dolan	Glens Falls	1.488	Fair.
1917	January 29, 1890	C. P. Callen	Glens Falls	1.490	Good.
1933	January 29, 1890	Flood & Kingsley	Sandy Hill	1.488	Inferior.
1942	January 29, 1890	F. B. Davis	Fort Edward	1.488	Fair.
1943	January 29, 1890	E. L. Potter	Fort Edward	1.488	Fair.
1951	January 29, 1890	T. H. S. Pennington	Saratoga Springs	1.490	Fair.
1960	February 1, 1890	J. H. Westcot	Ballston	1.488	Good.
2043	April 2, 1890	J. M. Hawley	Kinderhook	1.490	Good.

COMPOUND SPIRIT OF ETHER—(*Spiritus Aetheris Compositus, U. S. P.*).

Forty-six samples examined, of which five were of good quality, while there were of fair quality seven, and inferior thirty-four. Concerning this article, I quote from my last annual report:

"Compound spirit of ether or 'Hoffman's anodyne' is frequently prescribed by physicians and often employed as a household remedy, and while an article of good quality can be procured from responsible manufacturers, or prepared without difficulty by the intelligent and careful pharmacist, the fact is that a spurious article answering to none of the requirements of the Pharmacopœia is generally sold in its stead, because it is cheaper. Hoffman's anodyne is openly quoted at fifty-two cents a pound in a recent price-list published in a leading pharmaceutical journal, which is about one-quarter the price of the real article. This cheap, spurious and worthless article, obtained as a secondary product in the manufacture of ether, consists chiefly of alcohol, ether and water, with little or none of the ethereal oil upon which the virtue of the preparation largely depends. Dealers may urge that the sale of this spurious article as a household remedy to people who would complain of the price necessarily charged for a genuine article is excusable; but without admitting this as a valid excuse for dispensing a fraudulent and worthless drug, it is evident that its sale in response to a physician's prescription or written order, giving full title and specifying 'U. S. P.,' is entirely inexcusable and unwarranted and equally blameworthy, whether due to ignorance or cupidity. The habit of keeping two qualities of officinal drugs can not be too strongly condemned, but the results of the above examination would seem to show that many dealers, so far as this preparation is concerned, keep only one, and that a spurious article. When officinal preparations are called for they should be furnished by the dealer, or no sale made."

The specific gravity of this preparation is not stated in the Pharmacopœia, but it should be about 0.796. As made by the process laid down in the Pharmacopœia of 1870, in which ether, and not stronger ether, was employed and more of the ethereal oil was used, it had a specific gravity of 0.815, *but the specific gravity alone is no criterion of quality.* The following table gives particulars concerning the samples examined:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 60° Fahr.	Quality.
1894	December 31, 1889	W. R. Post	Catskill	0.865	Inferior.
1895	December 31, 1889	Dykeman & Schofield	Catskill	0.840	Inferior.
1896	December 31, 1889	Clarke & Whitmarsh	Catskill	0.804	Inferior.
1948	January 29, 1890	C. F. Fish	Saratoga Springs	0.810	Fair.
1949	January 29, 1890	J. M. Colcord	Saratoga Springs	0.803	Inferior.
1950	February 1, 1890	F. Menges	Saratoga Springs	0.809	Inferior.
1962	February 1, 1890	F. E. Mitchell	Ballston	0.884	Inferior.
1963	February 1, 1890	W. G. Ball	Ballston	0.806	Inferior.
1964	February 1, 1890	E. G. Purdy	Ballston	0.806	Inferior.
1975	February 1, 1890	S. H. Hall	Mechanicville	0.795	Fair.
1976	February 1, 1890	G. H. Whitney	Mechanicville	0.803	Good.
1981	February 1, 1890	W. Barkman	Waterford	0.806	Inferior.
1982	February 1, 1890	J. Higgins & Co	Waterford	0.808	Fair.
1987	February 1, 1890	W. W. Spaulding	Lansingburgh	0.890	Inferior.
1988	February 1, 1890	J. H. Adams	Lansingburgh	0.887	Inferior.
1989	February 1, 1890	H. S. Dickson	Lansingburgh	0.887	Inferior.
2034	April 1, 1890	Rice Bros. & Baringer	Chatham	0.815	Good.
2035	April 1, 1890	W. H. Barnes	Chatham	0.806	Inferior.
2036	April 1, 1890	A. J. Fellows	Chatham	0.800	Good.
2044	April 2, 1890	J. M. Hawley	Kinderhook	0.892	Inferior.
2052	April 2, 1890	J. Van Buren	Castleton	0.806	Inferior.
2053	April 2, 1890	C. W. Knowlton	Castleton	0.876	Inferior.
2061	April 23, 1890	E. Holley, Jr	Rhinebeck	0.810	Fair.
2062	April 23, 1890	B. N. Baker	Rhinebeck		Fair.

2063	April 23, 1890	Fero & Cotting	Rhinebeck	0.812	Inferior.
2120	April 23, 1890	Wood & Tittamer	Poughkeepsie	0.808	Good.
2121	April 23, 1890	Wilkinson, Roberts & Co	Poughkeepsie	0.811	Inferior.
2129	April 24, 1890	B. F. Greene	Matteawan	0.826	Fair.
2130	April 24, 1890	E. H. Ellis	Matteawan	0.870	Inferior.
2134	April 24, 1890	P. Greene	Fishkill-on-Hudson.	0.807	Inferior.
2142	April 24, 1890	W. Doderer	Newburgh	0.816	Inferior
2143	April 24, 1890	I. C. Chapman	Newburgh	0.822	Fair.
2144	April 24, 1890	J. A. Joslin	Newburgh	0.847	Inferior.
2145	April 24, 1890	I. Caldwell	Newburgh	0.877	Inferior.
2361	November 5, 1890	H. M. Sweet	Cohoes	0.802	Inferior.
2362	November 5, 1890	D. S. Dodge	Cohoes	0.880	Inferior.
2363	November 5, 1890	M. McDermott	Cohoes	0.845	Inferior.
2364	November 5, 1890	W. Brown	Cohoes	0.874	Inferior.
2365	November 5, 1890	P. H. Spillane	Cohoes	0.845	Inferior.
2366	November 5, 1890	J. S. Ten Eyck	Cohoes	0.863	Inferior.
2367	November 5, 1890	J. H. Wilbur	Cohoes	0.880	Inferior.
2368	November 5, 1890	Archibold Bros	Cohoes	0.798	Good.
2369	November 5, 1890	D. Hermans	Cohoes	0.870	Inferior.
2388	November 10, 1890	S. Hutchison	West Troy	0.894	Inferior.
2389	November 10, 1890	J. E. Miller	West Troy	0.870	Inferior.
2390	November 10, 1890	F. H. Huntley	West Troy	0.842	Inferior.

[illegible]

[illegible] the report the present [illegible] genuine [illegible] containing [illegible] per cent of real ethyl nitrite instead of [illegible] per cent as claimed. In testing the samples examined, therefore, since it would be unfair to demand a better product than the genuine[illegible] ten-cent samples containing [illegible] per cent have been classed as of "good quality," and those giving over [illegible] per cent and [illegible] per cent were pronounced being probably made from the so-called "concentrated nitre," and employing no [illegible] acid therein, have been classed as of "excessive strength." Samples yielding from two to [illegible] per cent have been classed as of "fair," and those falling below two per cent as of "inferior quality." Sixty-eight samples submitted to these places were examined, of which thirteen only, or less than one-fifth of the total number were of good quality; two were of fair quality; two of excessive strength, and the remaining fifty-one samples were of inferior quality, many of them containing but a bare trace of the ethyl nitrite upon which the value of the preparation depends. Omitting the two samples of excessive strength the remaining sixty-six samples contained on an average, 1.63 per cent of ethyl nitrite. This is certainly a bad showing, though such a condition of affairs has long been known to exist by those who have investigated the matter. In a paper read before the New York State Pharmaceutical Association in 1886, Dr. E. G. Eccles, of Brooklyn, who had tested a large number of samples purchased from manufacturers and wholesale and retail dealers, says: "In spite of the valuable properties this agent possesses, it is slowly but surely sinking into disuse and disrepute. The treatment it receives at the hands of wholesale and retail druggists is responsible for this. The statement about to be made in this connection will probably startle you and to some appear wildly erroneous. It is given, however, as a candid opinion, based upon substantial facts. *It is the rarest accident if a physician gets what he orders in any part of the United States when he writes for an ounce or any other definite amount of Spiritus Aetheris Nitrosi.*" I am of opinion that this is no exaggeration, and it is certainly much to be deplored that such a condition of things should exist. It is not denied that the manufacture of this article is troublesome, nor that the preparation is one which must be well kept and carefully dispensed, since it unquestionably



deteriorates by age and exposure. Nevertheless, an article which would be classed as good by the standard we have adopted, as above described, can be purchased in the market or prepared by the intelligent and careful pharmacist, and the sale of an inferior or decomposed article is entirely inexcusable and may generally be attributed either to the purchase of the cheapest obtainable goods or to gross carelessness either in the preparation or preservation of the article in question. A list of the samples examined is appended:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
2246	September 4, 1890	Lake & Coon	Utica	5.87	Good.
2247	September 4, 1890	G. O. Pennock	Utica	2.58	Good.
2248	September 4, 1890	G. B. Williams	Utica	1.28	Inferior.
2249	September 4, 1890	W. Howarth	Utica	0.27	Inferior.
2250	September 4, 1890	G. L. Hill	Utica	1.19	Inferior.
2251	September 4, 1890	W. Blaikie	Utica	0.82	Inferior.
2252	September 4, 1890	J. W. Cone	Utica	0.90	Inferior.
2253	September 4, 1890	Luce & Plumb	Utica	1.22	Inferior.
2254	September 4, 1890	Howarth & Ballard	Utica	5.32	Good.
2255	September 4, 1890	J. H. Sheehan & Co	Utica	0.38	Inferior.
2256	September 4, 1890	J. B. McMillan	Utica	0.65	Inferior.
2257	September 4, 1890	F. T. Ray & Co	Utica	2.57	Good.
2258	September 4, 1890	C. & H. H. Hamilton	Utica	0.21	Inferior.
2259	September 4, 1890	T. Monahan	Utica	0.06	Inferior.
2260	September 4, 1890	F. J. Gschwind	Utica	0.45	Inferior.
2274	September 4, 1890	Kellogg & Carrier	Frankfort	8.06	Excessive strength.
2275	September 4, 1890	E. Steele	Frankfort	0.40	Inferior.
2278	September 4, 1890	Ogden & Downs	Ilion	1.65	Inferior.
2279	September 4, 1890	D. E. Walker	Ilion	3.90	Good.
2280	September 4, 1890	E. M. Draper	Ilion	1.41	Inferior.
2284	September 5, 1890	L. H. Hollon	Herkimer	0.24	Inferior.
2285	September 5, 1890	C. W. Palmer & Co	Herkimer	0.12	Inferior.
2286	September 5, 1890	Prowse & Thomson	Herkimer	Trace.	Inferior.
2292	September 5, 1890	H. G. Babcock & Co	Little Falls	0.51	Inferior.

2293	September 5, 1890	J. H. Smith	Little Falls	0.06	Inferior.
2294	September 5, 1890	A. Woolever	Little Falls	1.08	Inferior.
2295	September 5, 1890	J. V. Hemstreet	Little Falls	0.48	Inferior.
2302	September 5, 1890	W. S. Bellinger	Canajoharie	0.57	Inferior.
2303	September 5, 1890	Dygert & Wohlgemuth	Canajoharie	1.60	Inferior.
2304	September 5, 1890	A. M. Hodge	Canajoharie	0.30	Inferior.
2311	September 6, 1890	Martin & Shinman	Fort Plain	Trace.	Inferior.
2312	September 6, 1890	E. S. Gregory	Fort Plain	Trace.	Inferior.
2313	September 6, 1890	Devoe & Shumway	Fort Plain	Trace.	Inferior.
2317	September 6, 1890	S. Walrath	St. Johnsville	7.88	Excessive strength.
2318	September 6, 1890	C. Whyland	St. Johnsville	Trace.	Inferior.
2322	October 14, 1890	G. H. Ingraham	Amsterdam	1.53	Inferior.
2323	October 14, 1890	Bradford & Dickinson	Amsterdam	0.51	Inferior.
2324	October 14, 1890	E. W. Clark	Amsterdam	1.26	Inferior.
2325	October 14, 1890	Powell & Gilbert	Amsterdam	0.56	Inferior.
2326	October 14, 1890	N. C. Becker	Amsterdam	4.80	Good.
2327	October 14, 1890	C. W. Striker	Amsterdam	0.15	Inferior.
2334	October 14, 1890	Wm. Sauter	Schenectady	4.71	Good.
2335	October 14, 1890	G. Steinfuhrer	Schenectady	1.41	Inferior.
2336	October 14, 1890	W. T. Hanson & Co	Schenectady	4.62	Good.
2337	October 14, 1890	A. T. Veeder & Son	Schenectady	2.99	Good.
2338	October 14, 1890	N. H. Kittle	Schenectady	Trace.	Inferior.
2339	October 14, 1890	Van Zandt & Shaffer	Schenectady	0.45	Inferior.
2340	October 14, 1890	H. A. Kerste	Schenectady	6.48	Good.
2341	October 14, 1890	C. H. Horstmann	Schenectady	1.28	Inferior.
2352	November 5, 1890	H. M. Sweet	Cohoes	1.28	Inferior.
2353	November 5, 1890	D. S. Dodge	Cohoes	Trace.	Inferior.
2354	November 5, 1890	M. McDermott	Cohoes	2.18	Fair.
2355	November 5, 1890	W. Brown	Cohoes	1.28	Inferior.
2356	November 5, 1890	P. H. Spillane	Cohoes	0.75	Inferior.
2357	November 5, 1890	J. S. Ten Eyck	Cohoes	2.40	Fair.

SPIRIT OF NITROUS ETHER, U. S. P. (*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent ethyl nitrite.	Quality.
2358	November 5, 1890	J. H. Wilbur	Cohoes	0.37	Inferior.
2359	November 5, 1890	Archibold Bros	Cohoes	1.54	Inferior.
2360	November 5, 1890	D. Hermans	Cohoes	1.20	Inferior.
2379	November 5, 1890	J. Higgins & Co	Waterford	Trace.	Inferior.
2380	November 5, 1890	M. Barkman & Co	Waterford	2.08	Good.
2385	November 10, 1890	G. Hutchison	West Troy	Trace.	Inferior.
2386	November 10, 1890	J. E. Miller	West Troy	0.33	Inferior.
2387	November 10, 1890	F. H. Huntley	West Troy	0.07	Inferior.
2394	November 10, 1890	J. E. Grady	Green Island	1.88	Inferior.
2395	November 10, 1890	M. A. Barnhart	Green Island	Trace.	Inferior.
2398	November 10, 1890	W. W. Spaulding	Lansingburgh	1.40	Inferior.
2399	November 10, 1890	J. H. Adams	Lansingburgh	4.58	Good.
2400	November 10, 1890	H. W. Wood	Lansingburgh	4.17	Good.

STRONGER ETHER — (*Aether Fortior, U. S. P.*).

Thirty samples examined, of which there were of good quality, seventeen; inferior, twelve; while one consisted of a mixture of chloroform and alcohol.

Two qualities of ether are recognized by the U. S. P., viz., "ether," specific gravity about 0.750, and containing about twenty-six per cent of alcohol, and "stronger ether," with a specific gravity not higher than 0.725, at fifteen degrees C., and containing about six per cent of alcohol. The term "sulphuric ether" is not recognized in the Pharmacopœia. Stronger ether is generally used as an anæsthetic, and ought always to be kept in stock by the pharmacist. When it is called for by its officinal name in full it ought always be supplied, and the substitution of common ether or the so-called "washed ether" of the trade is entirely inexcusable, and betokens great carelessness or ignorance on the part of the seller. Particulars concerning these samples are appended:

STRONGER ETHER, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Specific gravity at 59° Fahr.	Quality.
1864	December 30, 1889	W. Laycock	Kingston	0.723	Good.
1865	December 30, 1889	Van Deusen Bros	Kingston	0.723	Good.
1866	December 30, 1889	Cooper & Hardenburgh	Kingston	0.724	Good.
1867	December 30, 1889	Spore & Eltinge	Kingston	0.755	Inferior.
1909	December 31, 1889	A. V. D. Collier	Coxsackie	0.726	Good.
1910	December 31, 1889	J. C. McClure	Coxsackie	0.723	Good.
1911	December 31, 1889	Marsh & Co	Coxsackie	0.723	Good.
1918	January 29, 1890	Ames & Baldwin	Glens Falls	0.723	Good.
1919	January 29, 1890	Leggett & Bush	Glens Falls	0.726	Good.
1920	January 29, 1890	Sanford & Pearsall	Glens Falls	0.752	Inferior.
1939	January 29, 1890	F. B. Davis	Fort Edward	0.723	Good.
1940	January 29, 1890	E. L Potter	Fort Edward	0.745	Inferior.
1941	January 29, 1890	Coutryman & Wing	Fort Edward	0.743	Inferior.
1961	February 1, 1890	W. J. Redmond	Ballston	0.723	Good.
2008	March 28, 1890	Wardle & Son	Hudson	0.743	Inferior.
2031	April 1, 1890	Rice Bros. & Baringer	Chatham	0.724	Good.
2032	April 1, 1890	W. H. Barnes	Chatham	0.724	Good.
2033	April 1, 1890	H. J. Fellows	Chatham	0.725	Good.
2050	April 2, 1890	J. Van Buren	Castleton	0.760	Inferior.
2051	April 2, 1890	C. W. Knowlton	Castleton	0.726	Good.
2058	April 23, 1890	E. Holley, Jr	Rhinebeck	0.756	Inferior.
2059	April 23, 1890	B. N. Baker	Rhinebeck	0.725	Good.
2060	April 23, 1890	Fero & Cotting	Rhinebeck	0.755	Inferior.

2080	April	23, 1890	A. Clark	Poughkeepsie	0.746	Inferior.
2081	April	23, 1890	Humphrey & Forman	Poughkeepsie	0.750	Inferior.
2082	April	23, 1890	E. C. Bolton	Poughkeepsie	.....	Consists of a mixture of chloroform and alcohol.
2125	April	24, 1890	H. B. Bevier	Matteawan	0.764	Inferior.
2126	April	24, 1890	B. F. Greene	Matteawan	0 726	Good.
2135	April	24, 1890	S. Mapes	Fishkill-on-Hudson.	0.752	Inferior.
2152	April	24, 1890	W. Doderer	Newburgh	0.725	Good.

GLYCERIN — (*Glycerinum, U. S. P.*)

Five examples examined, all of good quality, as follows:

GLYCERIN, U. S. P.

Number of sample.	Date of Collection.	FROM WHOM PURCHASED.	Where purchased.	Quality.
1971	February 1, 1890	W. G. Ball	Ballston	Good.
1972	February 1, 1890	E. G. Purdy	Ballston	Good.
1977	February 1, 1890	S. H. Hall	Mechanicville	Good.
1991	February 1, 1890	J. H. Adams	Lansingburgh	Good.
1992	February 1, 1890	A. C. Snyder	Lansingburgh	Good.

DILUTED HYDROBROMIC ACID — (*Acidum Hydrobromicum Dilutum U. S. P.*)

Twelve samples examined, of which there were of good quality, six; fair, one; inferior, three; excessive strength, one, and one consisted of diluted hydrochloric acid of good quality. The Pharmacopœia requires ten per cent of the absolute acid and the same for diluted hydrochloric and nitric acids. In the case of diluted sulphuric acid ten per cent of the officinal sulphuric acid is required. In rating these acids those containing from nine to 12.5 per cent have been classed as good; 7.5 to 8.9, fair; below 7.5 inferior, and over 12.5 excessive strength. These samples varied between 0.60 and 14.40 per cent, Omitting the sample wrongly sold and that of excessive strength, the remaining ten averaged 8.41 per cent, but the individual samples will be seen, by reference to the following table, to present wide variations:

DILUTED HYDROBROMIC ACID, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
1899	December 31, 1889	Dykeman & Schofield	Catskill	12.20	Good.
1900	December 31, 1889	Clarke & Whitmarsh	Catskill	0.60	Inferior.
1947	January 29, 1890	Contryman & Wing	Fort Edward	11.60	Consists of diluted hydrochloric acid; error in sale.
1967	February 1, 1890	W. J. Redmond	Ballston	11.60	Good.
2009	March 28, 1890	J. M. Johnson	Hudson	10.60	Good.
2010	March 28, 1890	B. Stedman	Hudson	8.00	Fair.
2011	April 1, 1890	Van Tassel & Tobey	Hudson	11.00	Good.
2151	April 24, 1890	I. C. Chapman	Newburgh	12.30	Good.
2267	September 4, 1890	Howarth & Ballard	Utica	3.60	Inferior.
2268	September 4, 1890	J. H. Sheehan & Co	Utica	11.60	Good.
2269	September 4, 1890	F. T. Ray & Co	Utica	2.60	Inferior.
2310	September 5, 1890	Dygert & Wohlgemuth	Canajoharie	14.40	Excessive strength.

DILUTED HYDROCHLORIC ACID — (*Acidum Hydrochloricum Dilutum, U. S. P.*).

Twenty-eight samples examined, of which fifteen were of good quality; six were fair; six of inferior and one of excessive strength. The Pharmacopœia requires ten per cent of the absolute acid. These samples ranged from 3.00 to 31.40 per cent, and, omitting the sample of excessive strength, averaged 8.5 per cent. For standard employed in rating these samples see under diluted hydrobromic acid. The samples are described in the following table:

DILUTED HYDROCHLORIC ACID, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
1875	December 30, 1889	C. F. Roth	Kingston	11.20	Good.
1876	December 30, 1889	E. W. Knapp	Kingston	8.40	Fair.
1877	December 30, 1889	F. J. R. Clarke	Kingston	10.60	Good.
2004	March 28, 1890	Wardle & Son	Hudson	3.00	Inferior.
2005	March 28, 1890	J. M. Johnson	Hudson	8.70	Good.
2006	March 28, 1890	B. Stedman	Hudson	3.30	Inferior.
2007	April 1, 1890	Van Tassel & Tobey	Hudson	9.40	Good.
2097	April 23, 1890	C. S. Bowne	Poughkeepsie	31.40	Excessive strength.
2098	April 23, 1890	Strickler & Schwartz	Poughkeepsie	10.20	Good.
2099	April 23, 1890	Wood & Tittamer	Poughkeepsie	9.50	Good.
2100	April 23, 1890	A. A. & J. W. Goetchus	Poughkeepsie	7.00	Inferior.
2101	April 23, 1890	Baldwin & Raymond	Poughkeepsie	8.20	Fair.
2102	April 23, 1890	W. F. Turner	Poughkeepsie	4.60	Inferior.
2132	April 24, 1890	E. H. Ellis	Matteawan	8.10	Fair.
2136	April 24, 1890	P. Greene	Fishkill-on-Hudson.	8.70	Fair.
2159	April 24, 1890	E. R. Post & Co	Newburgh	8.30	Fair.

Number of sample.	Date of collection.	From whom purchased.	Where purchased.	Inspector.	Disposition.
2160	April 24, 1890	I. V. Wiggins & Son	Newburgh	Wood	
2161	April 24, 1890	R. Evans	Newburgh	Wood	Pass
2193	June 25, 1890	Dalrymple & Warner	Albany	Wood	
2194	June 25, 1890	D. Donnelly	Albany	Wood	
2195	June 25, 1890	S. C. Hodgkins	Albany	Wood	
2196	June 25, 1890	A. R. Hunted & Co.	Albany	Wood	
2197	June 25, 1890	C. E. Lloyd	Albany	Wood	
2198	June 26, 1890	A. R. Miller	Albany	Wood	
2199	June 26, 1890	J. Del. Townsend	Albany	Wood	
2200	June 25, 1890	F. J. Smith	Albany	Wood	
2299	September 5, 1890	J. W. Baker	Little Falls	Interior	
2300	September 5, 1890	J. H. Smith	Little Falls	Interior	

IODOFORM — (*Iodoformum, U. S. P.*).

Two samples examined, both of which were of good quality, as shown below:

IODOFORM, U. S. P.

Number of sample.	Date of collection.	FROM WHOM PURCHASED.	Where purchased.	Quality.
1944	January 29, 1890	E. L. Potter	Fort Edward	Good.
1968	February 1, 1890	W. J. Redmond	Ballston	Good.

Number			Whom purchased	Quality
1885	December 30, 1885	A. Eighmyer	Baugenthen	Pair.
1886	December 30, 1886	W. E. Van Buskirk	Baugenthen	Pair.

TINCTURE OF CHLORIDE OF IRON — (*Tinctura Ferri Chloridi, U. S. P.*).

Three samples examined, two of which were of good and one of fair quality, as follows:

TINCTURE OF CHLORIDE OF IRON, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1906	December 31, 1889	A. V. D. Collier	Coxsackie	Good.
1907	December 31, 1889	J. C. McClure	Coxsackie	Good.
1908	December 31, 1889	Marsh & Co	Coxsackie	Fair.

SOLUTION OF LIME — "LIME WATER" (*Liquor Calcis, U. S. P.*).

Three samples examined, of which one was of good and two of fair quality as follows:

LIME WATER, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1887	December 30, 1889	A. Rightmyer	Saugerties	Fair.
1888	December 30, 1889	W. E. Van Buskirk	Saugerties	Good.
1897	December 31, 1889	W. R. Post	Catskill	Fair.

MAGNESIA — (*Magnesia, U. S. P.*).

Thirteen samples examined, of which but one was of good quality, while seven were fair, four inferior, and one consisted of carbonate of magnesium. This article is frequently carelessly kept and therefore often largely carbonated by exposure to air. Sometimes the carbonate is ignorantly sold when magnesia is called for. Magnesia should be kept in well-closed vessels. A list of the samples examined is appended:

MAGNESIA, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1889	December 30, 1889	A. Rightmyer	Saugerties	Consists of carbonate. Error in sale.
1890	December 30, 1889	W. E. Van Buskirk	Saugerties	Fair.
1912	December 31, 1889	A. V. D. Collier	Coxsackie	Inferior.
1913	December 31, 1889	J. C. McClure	Coxsackie	Good.
1914	December 31, 1889	Marsh & Co	Coxsackie	Fair.
2113	April 23, 1890	Strickler & Schwartz	Poughkeepsie	Fair.
2114	April 23, 1890	Barnes Bros	Poughkeepsie	Inferior.
2115	April 23, 1890	C. Westervelt	Poughkeepsie	Fair.
2116	April 23, 1890	Wilkinson, Roberts & Co	Poughkeepsie	Fair.
2117	April 23, 1890	A. A. & J. W. Goetchus	Poughkeepsie	Inferior.
2118	April 23, 1890	Baldwin & Raymond	Poughkeepsie	Fair.
2119	April 23, 1890	W. F. Turner	Poughkeepsie	Inferior.
2172	April 24, 1890	D. Kingston	Newburgh	Fair.

Bromide of Potassium (Potassii Bromidum, U. S. P.)

The samples examined, of which six were of good and three possessed too great alkalinity or contained [illegible] traces of the carbonate, bromate or iodide, and were rated as fair. A list of the samples examined is appended.

Bromide of Potassium, U. S. P.

No.	Date of collection	Of whom purchased	Where purchased	Quality
[illegible]	January [illegible], 1890	[illegible]	Glens Falls	Fair
[illegible]	January [illegible], 1890	[illegible]	Glens Falls	Fair
[illegible]	January [illegible], 1890	[illegible]	Glens Falls	Good
[illegible]	January [illegible], 1890	[illegible]	Glens Falls	Fair
[illegible]	January [illegible], 1890	[illegible] & Co.	Sandy Hill	Good
[illegible]	February [illegible], 1890	[illegible]	Lansingburgh	Good
[illegible]	April [illegible], 1890	[illegible]	Valatie	Good
[illegible]	April [illegible], 1890	[illegible]	Newburgh	Good
[illegible]	April [illegible], 1890	[illegible]	Newburgh	Good

DILUTED NITRIC ACID — (*Acidum Nitricum Dilutum, U. S. P.*).

Three samples tested, all of which were of good quality. The Pharmacopœia requires ten per cent of the absolute acid. The percentage strengths of the samples examined are given in the following table and varied from 9.50 to 12.50 per cent:

DILUTED NITRIC ACID, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
2103	April 23, 1890	C. S. Bowne	Poughkeepsie	9.50	Good.
2104	April 23, 1890	Strickler & Schwartz	Poughkeepsie	12.50	Good.
2105	April 23, 1890	Wood & Tittamer	Poughkeepsie	9.90	Good.

Iodide of Potassium — (*Potassii Iodidum, U. S. P.*)

Fifteen samples examined, of which three were of good quality, eleven of fair and one of inferior quality, the latter classes either possessing too great alkalinity or containing too decided traces of the iodate, sulphate or other impurities. A list of the samples is appended:

Iodide of Potassium, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1901	December 31, 1889	J. H. Vosburgh	Catskill	Fair.
1902	December 31, 1889	W. R. Post	Catskill	Fair.
1903	December 31, 1889	W. L. DuBois	Catskill	Fair.
2027	April 1, 1890	W. J. Miller	Hudson	Fair.
2028	April 1, 1890	Link & Best	Hudson	Fair.
2029	April 1, 1890	Rossman & McKinstry	Hudson	Inferior.
2030	April 1, 1890	Rice Bros	Hudson	Fair.
2048	April 2, 1890	P. B. Van Slyck	Valatie	Good.
2133	April 24, 1890	E. H. Ellis	Matteawan	Fair.
2140	April 24, 1890	P. Greene	Fishkill-on-Hudson	Fair.
2164	April 24, 1890	T. Merritt	Newburgh	Good.
2165	April 24, 1890	E. R. Post & Co	Newburgh	Fair.
2166	April 24, 1890	L. Y. Wiggins & Son	Newburgh	Fair.
2167	April 24, 1890	D. Kingston	Newburgh	Good.
2168	April 24, 1890	R. Ennis	Newburgh	Fair.

RHUBARB—(*Rheum, U. S. P.*).

Four samples of the powdered drug were examined, of which three were of good and one of fair quality, as follows:

RHUBARB (POWDERED), U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1979	February 1, 1890	G. H. Whitney	Mechanicville	Good.
1983	February 1, 1890	W. Barkman	Waterford	Good.
1984	February 1, 1890	J. Higgins & Co	Waterford	Good.
1994	February 1, 1890	H. S. Dickson	Lansingburgh	Fair.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1882	December 30, 1889	C. F. Roth	Kingston	Good.
1883	December 30, 1889	E. W. Knapp	Kingston	Consists of safflower; error in sale.
1884	December 30, 1889	F. J. R. Clarke	Kingston	Fair.
1905	December 31, 1889	Clarke & Whitmarsh	Catskill	Consists of safflower; error in sale.
2026	April 1, 1890	W. J. Miller	Hudson	Consists of safflower; error in sale.
2067	April 23, 1890	E. Holley, Jr.	Rhinebeck	Consists of safflower; error in sale.
2068	April 23, 1890	B. N. Baker	Rhinebeck	Consists of safflower; error in sale.
2069	April 23, 1890	Fero & Cotting	Rhinebeck	Consists of safflower; error in sale.
2092	April 23, 1890	Humphrey & Forman	Poughkeepsie	Consists of safflower; error in sale.
2093	April 23, 1890	E. C. Bolton	Poughkeepsie	Good.
2094	April 23, 1890	Wood & Tittamer	Poughkeepsie	Good.
2095	April 23, 1890	Doty & Humphrey	Poughkeepsie	Consists of safflower; error in sale.
2131	April 24, 1890	H. B. Bevier	Matteawan	Consists of safflower; error in sale.
2139	April 24, 1890	S. Mapes	Fishkill-on-Hudson	Consists of safflower; error in sale.
2180	April 24, 1890	J. A. Joslin	Newburgh	Good.
2181	April 24, 1890	E. R. Post & Co.	Newburgh	Consists of safflower; error in sale.
2182	April 24, 1890	L. Y. Wiggins & Son	Newburgh	Consists of safflower; error in sale.
2183	April 24, 1890	J. G. Birch	Newburgh	Consists of safflower; error in sale.
2184	April 24, 1890	R. Ennis	Newburgh	Good.
2378	November 5, 1890	J. H. Wilbur	Cohoes	Consists of safflower; error in sale.

SANTONIN — (*Santoninum, U. S. P.*).

Four samples examined, all of good quality, as follows:

SANTONIN, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1936	January 29, 1890	Flood & Kingsley	Sandy Hill	Good.
1937	January 29, 1890	Smalley & Co	Sandy Hill	Good.
1945	January 29, 1890	F. B. Davis	Fort Edward	Good.
1946	January 29, 1890	Contryman & Wing	Fort Edward	Good.

COMPOUND EFFERVESCING POWDER—(*Pulvis Effervescens Compositus, U. S. P.*).

Thirty samples examined, of which fifteen were of good weight and quality; six were rated as fair, and nine as inferior. Seidlitz powders are generally measured and not weighed, and while it is by no means necessary that they be made with great accuracy, the contents of the papers should certainly not vary to exceed twenty per cent. A firm in Brooklyn advertise in a leading pharmaceutical journal seidlitz powders denominated "Regular" which contain but two drachms of the seidlitz mixture, instead of two drachms and two scruples, in the blue paper. This is just twenty-five per cent short weight. Particulars concerning the samples examined are appended:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
2201	June 25, 1890	W. S. Elmendorf.....	Albany	Good weight and quality.
2202	June 25, 1890	Dalrymple & Warner..	Albany	Good weight and quality.
2203	June 25, 1890	D. Donnelly.....	Albany	Blue paper 17.5 per cent short weight; fair.
2204	June 25, 1890	E. Hardin.....	Albany	Good weight and quality.
2205	June 25, 1890	S. C. Hodgkins	Albany	Good weight and quality.
2206	June 25, 1890	A. B. Huested & Co ...	Albany	Good weight and quality.
2207	June 25, 1890	F. W. Hoffman	Albany	Blue paper 38.7 per cent short weight; inferior.
2208	June 25, 1890	C. E. Lloyd.....	Albany	Good weight and quality.
2209	June 25, 1890	W. E. Masten	Albany	Good weight and quality.
2210	June 25, 1890	A. R. Miller	Albany	Blue paper 13.7 per cent short weight; fair.
2211	June 25, 1890	J. DeP. Townsend	Albany	Good weight and quality.
2212	June 25, 1890	C. Van Loon	Albany	Blue paper 21 9 per cent short weight; inferior.
2213	June 25, 1890	J. Bandorf	Albany	Good weight and quality.
2214	June 25, 1890	F. J. Smith	Albany	Good weight and quality.
2230	June 27, 1890	H. Gnadendorff	Troy	Good weight and quality.
2231	June 27, 1890	R. H. Starbuck	Troy	Good weight and quality.
2232	June 27, 1890	Drake & Moffitt.....	Troy	Blue paper 41.2 and white paper 28.5 per cent short weight; inferior.
2233	June 27, 1890	G. W. Holcomb	Troy	Blue paper 38.1 per cent short weight; inferior.
2234	June 27, 1890	F. M. Brower.....	Troy	Good weight and quality.
2235	June 27, 1890	Moncrief & Francis ...	Troy	Blue paper 20.6 and white paper 42.9 per cent short weight; inferior.
2236	June 27, 1890	E. W. Stoddard.....	Troy	Blue paper 53.1 per cent short weight; inferior.

2237	June	27, 1890	L. Burton & Co.	Troy	Blue paper 13.8 per cent short weight; fair.
2238	June	27, 1890	H. Schneider	Troy	Blue paper 10 and white paper 17 per cent short weight; fair.
2239	June	27, 1890	C. H. Wiberley	Troy	Good weight and quality.
2240	June	27, 1890	C. H. Shacklady	Troy	Blue paper 18.8 and white paper 20 per cent short weight; fair.
2241	June	27, 1890	D. F. Magill	Troy	Blue paper 28.2 and white paper 20 per cent short weight; inferior.
2242	June	27, 1890	J. M. Donnelly	Troy	Blue paper 13.2 and white paper 40 per cent short weight; inferior.
2243	June	27, 1890	W. H. Wilkinson	Troy	Blue paper 18.1 and white paper 17 per cent short weight; fair.
2244	June	27, 1890	C. H. Bosworth	Troy	Blue paper 12.5 and white paper 25.7 per cent short weight; inferior.
2245	June	27, 1890	A. M. Knowlson	Troy	Good weight and quality.

BROMIDE OF SODIUM — (*Sodii Bromidum, U. S. P.*).

Twenty-three samples examined, of which there were of good quality seven; fair, ten, and inferior, six. The samples reported as fair and inferior possessed too great alkalinity or contained too large quantities of iodate, bromate or carbonate. The following is a list of the samples:

BROMIDE OF SODIUM, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1925	January 29, 1890	R. N. Peck	Glens Falls	Inferior.
1926	January 29, 1890	Sanford & Pearsall	Glens Falls	Inferior.
1927	January 29, 1890	J. L. Dolan	Glens Falls	Fair.
1928	January 29, 1890	C. P. Callen	Glens Falls	Good.
2018	April 1, 1890	W. J. Miller	Hudson	Fair.
2019	April 1, 1890	Link & Best	Hudson	Good.
2020	April 1, 1890	Rossman & McKinstry	Hudson	Good.
2021	April 1, 1890	Rice Bros	Hudson	Good.
2046	April 2, 1890	P. B. Van Slyck	Valatie	Fair.
2083	April 23, 1890	A. Clark	Poughkeepsie	Fair.
2084	April 23, 1890	C. S. Bowne	Poughkeepsie	Fair.
2085	April 23, 1890	Humphrey & Forman	Poughkeepsie	Fair.
2086	April 23, 1890	E. C. Bolton	Poughkeepsie	Fair.
2087	April 23, 1890	Barnes Bros	Poughkeepsie	Fair.
2088	April 23, 1890	Doty & Humphrey	Poughkeepsie	Inferior.
2089	April 23, 1890	C. Westervelt	Poughkeepsie	Good.
2090	April 23, 1890	Wilkinson, Roberts & Co	Poughkeepsie	Fair.
2091	April 23, 1890	Baldwin & Raymond	Poughkeepsie	Inferior.

2127	April	24, 1890	H. B. Bevier	Matteawan	Inferior.
2128	April	24, 1890	B. F. Greene	Matteawan	Good.
2169	April	24, 1890	T. Merritt	Newburgh	Fair.
2170	April	24, 1890	D. Kingston	Newburgh	Inferior.
2171	April	24, 1890	I. Caldwell	Newburgh	Good.



PRECIPITATED SULPHUR—(*Sulphur Præcipitatum, U. S. P.*).

Thirty-seven samples examined, of which only nine were of good quality; one was of fair quality; twenty-two were of inferior quality, containing large quantities of sulphate of lime; while four consisted of washed sulphur and one of sublimed sulphur ignorantly or carelessly sold for precipitated sulphur. Concerning this article I quote from my last annual report: "The sale of common *lac sulphur* for the officinal precipitated sulphur is entirely inexcusable. It is loaded with sulphate of lime, and since precipitated sulphur of good quality is easily obtainable in the market, at a slightly higher price, this substitution ought never to be made; but the above results show that the proper article was sold in but about one-quarter of the cases. Pharmacists ought to be familiar with the various grades of the medicinal articles in which they deal, and a good result will be accomplished if, by calling attention to errors of this kind, an improvement in this respect can be brought about. The tests by which genuine precipitated sulphur can be distinguished from the impure commercial article are laid down in the Pharmacopœia, and are easily applied by the retailer. In this case, however, he hardly needs even to make a test, for the price he pays and name under which he buys sufficiently indicate the quality of the article supplied him." It is not a question whether the article is one of prime importance or not, but whether a drug largely adulterated with inert mineral matter ought to be sold for medicinal uses when a pure one is easily obtainable. The following table gives a description of the samples:

PRECIPITATED SULPHUR, U. S. P.

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1904	December 31, 1889	W. L. DuBois	Catskill.....	Largely adulterated with sulphate of lime; acid; inferior quality.
1938	January 29, 1890	Smalley & Co	Sandy Hill.....	Largely adulterated with sulphate of lime; inferior quality.
1957	January 29, 1890	J. M. Colcord	Saratoga Springs..	Largely adulterated with sulphate of lime; inferior quality.
1958	January 29, 1890	T. H. S. Pennington.	Saratoga Springs..	Largely adulterated with sulphate of lime; inferior quality.
1959	February 1, 1890	F. Menges	Saratoga Springs..	Consists of washed sulphur; error in sale.
1969	February 1, 1890	J. H. Westcott.....	Ballston	Largely adulterated with sulphate of lime; inferior quality.
1970	February 1, 1890	F. E. Mitchell	Ballston	Good.
1993	February 1, 1890	W. W. Spaulding...	Lansingburgh	Good.
2064	April 23, 1890	E. Holley, Jr.....	Rhinebeck	Largely adulterated with sulphate of lime; inferior quality.
2065	April 23, 1890	B. N. Baker	Rhinebeck	Largely adulterated with sulphate of lime; inferior quality.
2066	April 23, 1890	Fero & Cotting....	Rhinebeck	Consists of washed sulphur; error in sale.
2138	April 24, 1890	P. Greene.....	Fishkill-on-Hudson.	Largely adulterated with sulphate of lime; inferior quality.
2141	April 24, 1890	S. Mapes.....	Fishkill-on-Hudson.	Largely adulterated with sulphate of lime; inferior quality.
2173	April 24, 1890	W. Doderer	Newburgh	Largely adulterated with sulphate of lime; inferior quality.

PRECIPITATED SULPHUR, U. S. P.—(*Concluded*).

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
2174	April 24, 1890	I. C. Chapman.....	Newburgh	Largely adulterated with sulphate of lime; inferior quality.
2175	April 24, 1890	J. A. Joslin	Newburgh	Largely adulterated with sulphate of lime; inferior quality.
2176	April 24, 1890	T. Merritt	Newburgh	Good.
2177	April 24, 1890	J. G. Birch.....	Newburgh	Good.
2178	April 24, 1890	I. Caldwell.....	Newburgh	Good.
2179	April 24, 1890	F. A. Grenzebach...	Newburgh	Largely adulterated with sulphate of lime; inferior quality.
2270	September 4, 1890	Lake & Coon.....	Utica	Good.
2271	September 4, 1890	G. O. Pennock.....	Utica	Consists of sublimed sulphur; error in sale.
2272	September 4, 1890	G. B. Williams	Utica	Largely adulterated with sulphate of lime; inferior quality.
2273	September 4, 1890	G. L. Hill.....	Utica	Good.
2277	September 4, 1890	Kellogg & Carrier ..	Frankfort	Largely adulterated with sulphate of lime; inferior quality.
2283	September 4, 1890	E. M. Draper.....	Ilion	Largely adulterated with sulphate of lime; inferior quality.
2289	September 5, 1890	L. H. Hollon	Herkimer	Consists of washed sulphur; error in sale.
2290	September 5, 1890	C. W. Palmer & Co..	Herkimer	Largely adulterated with sulphate of lime; inferior quality.
2291	September 5, 1890	Prowse & Thomson .	Herkimer	Good.
2314	September 6, 1890	Martin & Shinman..	Fort Plain	Largely adulterated with sulphate of lime; inferior quality.

2315	September 6, 1890	E. S. Gregory	Fort Plain	Consists of washed sulphur; error in sale.
2316	September 6, 1890	Devoe & Shumway..	Fort Plain	Largely adulterated with sulphate of lime; inferior quality.
2320	September 6, 1890	S. Walrath.....	St. Johnsville	Good.
2321	September 6, 1890	C. Whyland.....	St. Johnsville	Largely adulterated with sulphate of lime; inferior quality.
2404	November 10, 1890	W. W. Spaulding ...	Lansingburgh.....	Fair.
2405	November 10, 1890	J. H. Adams.....	Lansingburgh.....	Largely adulterated with sulphate of lime; inferior quality.
2406	November 10, 1890	H. W. Wood	Lansingburgh.....	Largely adulterated with sulphate of lime; inferior quality.

WASHED SULPHUR — (*Sulphur Lotum, U. S. P.*).

Eighteen samples examined, of which fourteen were of good quality; one was of inferior quality, not being washed at all, but possessing all the natural acidity of the common flowers of sulphur, and two consisted of precipitated sulphur of good and one of precipitated sulphur of inferior quality, sold through ignorance or carelessness for washed sulphur, which was called for in writing. I quote from my last annual report: "Washed sulphur is one of the articles which has been selected for examination, not because it is a very important drug, but to test the carefulness and reliability of the dealer. The natural acidity of commercial sublimed sulphur, or flowers of sulphur, is removed by treatment with ammonia and subsequent washing, and as it is easily prepared by the retailer, or obtained from reliable dealers, there is no reason why another article should be substituted for it, or an impure article be sold." The following table gives a description of the samples:

Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Quality.
1878	December 30, 1889	W. Laycock	Kingston	Inferior.
1879	December 30, 1889	Van Deusen Bros	Kingston	Consists of precipitated sulphur; error in sale.
1880	December 30, 1889	Cooper & Hardenburgh	Kingston	Good.
1881	December 30, 1889	Spore & Eltinge	Kingston	Consists of precipitated sulphur; error in sale.
1956	January 29, 1890	C. F. Fish	Saratoga Springs	Good.
2022	April 1, 1890	W. J. Miller	Hudson	Good.
2023	April 1, 1890	Link & Best	Hudson	Good.
2024	April 1, 1890	Rossman & McKinstry	Hudson	Good.
2025	April 1, 1890	Rice Bros	Hudson	Good.
2054	April 2, 1890	J. Van Buren	Castleton	Good.
2055	April 2, 1890	C. W. Knowlton	Castleton	Good.
2096	April 23, 1890	A. Clark	Poughkeepsie	Consists of precipitated sulphur; inferior quality; error in sale.
2185	April 24, 1890	F. A. Grenzebach	Newburgh	Good.
2349	October 14, 1890	G. E. Duryee	Schenectady	Good.
2350	October 14, 1890	N. H. Kittle	Schenectady	Good.
2351	October 14, 1890	H. A. Kerste	Schenectady	Good.
2383	November 5, 1890	J. Higgins & Co	Waterford	Good.
2384	November 5, 1890	M. Barkman & Co	Waterford	Good.



Number of sample.	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Per cent.	Quality.
1891	December 31, 1889	J. H. Vosburgh	Catskill	9.50	Good.
1892	December 31, 1889	W. L. DuBois	Catskill	19.50	Excessive strength.
1921	January 29, 1890	Ames & Baldwin	Glens Falls	9.10	Good.
1922	January 29, 1890	Leggett & Bush	Glens Falls	11.00	Good.
1923	January 29, 1890	Sanford & Pearsall	Glens Falls	9.60	Good.
1934	January 29, 1890	Flood & Kingsley	Sandy Hill	10.10	Good.
1999	March 28, 1890	Wardle & Son	Hudson	9.80	Good.
2000	March 28, 1890	J. M. Johnson	Hudson	7.50	Fair.
2001	March 28, 1890	B. Stedman	Hudson	9.20	Good.
2002	March 28, 1890	Rossman & McKinstry	Hudson	9.40	Good.
2003	March 28, 1890	Van Tassel & Tobey	Hudson	10.10	Good.
2037	April 1, 1890	Rice Bros. & Baringer	Chatham	10.30	Good.
2038	April 1, 1890	W. H. Barnes	Chatham	9.20	Good.
2039	April 1, 1890	A. J. Fellows	Chatham	9.50	Good.
2070	April 23, 1890	A. Clark	Poughkeepsie	10.20	Good.
2071	April 23, 1890	C. S. Bowne	Poughkeepsie	9.80	Good.
2072	April 23, 1890	Humphrey & Forman	Poughkeepsie	18.50	Excessive strength.
2073	April 23, 1890	E. C. Bolton	Poughkeepsie	17.20	Excessive strength.
2074	April 23, 1890	Barnes Bros	Poughkeepsie	9.40	Good.
2075	April 23, 1890	Doty & Humphrey	Poughkeepsie	8.80	Fair.
2076	April 23, 1890	C. Westervelt	Poughkeepsie	11.20	Good.
2077	April 23, 1890	Wilkinson, Roberts & Co	Poughkeepsie	21.90	Excessive strength.
2078	April 23, 1890	A. A. & J. W. Goetchus	Poughkeepsie	12.50	Good.
2079	April 23, 1890	W. F. Turner	Poughkeepsie	14.00	Excessive strength.

WATER ANALYSES

During the past year seven samples of water have been examined as follows:

No. 69. Well at Mattetuck. Preliminary test.

No. 70. Water from Constableville. Source not stated.

No. 71. Fishkill Water Company's supply.

Nos. 72 and 73. Waverley Water Company's supply.

No. 74. Well at Voorheesville.

No. 75. Well at New Windsor.

Some preliminary tests only were made of No. 69, and the results in the case of No. 70 were vitiated by the keg in which the water was sent not being clean. Sample No. 73 was too small to admit of full analysis but was similar in character to No. 72. The results of the analysis of the other samples were as follows:

Results Parts Per 100,000.

	No. 71.	No. 72.	No. 74.	No. 75.
Color	Greenish-yellow	Yellowish	Nearly colorless	Nearly colorless.
Odor	Very slight	Very slight	None	Slightly unpleasant.
Chlorine	0.20	0.20	2.20	0.40
Nitrites	None	None	Trace	Present.
Free ammonia	0.0028	0.0036	0.0020	0.0085
Albuminoid ammonia	0.0138	0.0160	0.0085	0.0135
Total solids	4.50	8.20	36.40	18.10
Loss on ignition	2.40	2.60	15.60	5.10
Mineral matter	2.10	5.60	20.80	13.00

MISCELLANEOUS EXAMINATIONS.

A fire at No. 64 Hudson avenue, Albany, alleged to have resulted from the explosion of a kerosene lamp, was investigated February tenth and a sample of the oil said to have been such as was used in the lamp was tested and found to flash at 102 degrees Fahr. The accident probably resulted from carelessness.

A sample of buckwheat flour suspected of being adulterated with mineral matter of some kind was examined February twenty-sixth, and found to yield but 0.32 per cent of ash. Microscopical examination failed to reveal adulteration of any kind.

Two samples of sewage from the Soldier's Home at Bath were analyzed in May. The report upon the same is appended:

ALBANY, *May 7, 1890.*

DR. LEWIS BALCH, *Secretary State Board of Health, Albany:*

DEAR SIR.— May 2, 1890, I received from Professor Maurice Perkins, of the State Board of Health, two samples of sewage from the Soldiers' Home at Bath, Steuben county, N. Y., one "as it entered the Powers' system, and the other as it left." No. 1 was labeled "Crude; taken from inlet," and No. 2, "Clear; taken from outlet." A letter from Professor Perkins which accompanied the samples stated: "What we want to know is how much of the sewage is removed?" The results of the examination show that very little is removed in a strictly chemical sense. Some improvement, such as an imperfect filtration might have accomplished is, indeed, shown, but the organic matter, though diminished in quantity has not been destroyed. No. 2 is as much sewage as No. 1; the only material difference being that it is somewhat less rank and offensive. The analytical results are as follows, all determinations having been made upon the shaken sewage so that it might contain the sediment.

ALL RESULTS PARTS PER 100,000.

	No. 1 (from inlet).	No. 2 (from outlet).
Color and appearance	Turbid; blackish-green. Considerable suspended matter and sediment.	Turbid; greenish-brown. Less sediment than No. 1.
Odor	Highly offensive	Very disagreeable.
Chlorine	4.80	5.20.
Free ammonia	4.1600.	2.0800.
Albuminoid ammonia	0.3780	0.1480.
Nitrogen in nitrites and nitrates	Very low	Very low.
Total solids	48.20	37.10.
Loss on ignition	23.90	13.90.
Behavior during ignition	Blackening; very unpleasant odor	Blackening; unpleasant odor.
Mineral matter	24.30	23.20.

The chlorides and total solids in the above are rather low for ordinary sewage. The free and albuminoid ammonia are probably not far from the average. No. 2 showed a trace of nitrites, but nitrites and nitrates are generally very low if not entirely absent in fresh sewage. In these samples the amount was too small to be determined satisfactorily.

Yours respectfully.

WILLIS G. TUCKER,
Analyst.

A sample of bromide of potassium suspected of being adulterated was examined October thirtieth, and found to be neither better no worse than much now on the market. It was free from the bromate and iodide, but containing carbonate, sulphate and decided traces of the sodium salt, and was too strongly alkaline.

Two samples of candy thought to be impure were examined by Mr. E. J. Wheeler at my request in November, who reported that No. 1 contained sulphate of calcium, and that No. 2 contained of glucose 3.6 and of cane sugar 92.5 per cent. Dried at 100 degrees C., it lost 1.45 per cent, and it yielded 0.055 per cent of ash. It contained a small quantity of starch.

A sample of maple syrup from Bainbridge, thought to contain some poisonous or deleterious constituent, was examined December twenty-sixth. No metallic impurity or poisonous matter was detected.

Since September 1, 1885, when work was begun upon the present plan, 2,406 samples of drugs have been examined by me, being an average of thirty-nine samples for each month during which the work has been carried on. During the past year a number of second samples have been collected from dealers, whose goods had been found on previous occasions to be of inferior quality, and in the majority of instances these have been found to be of satisfactory quality, showing that the first notification had been heeded. The work in which we have been engaged continues to receive the hearty approval and support both of leading manufacturers and dealers and of the prominent journals of pharmacy and pharmaceutical associations, and is believed to have had a very decided influence in raising the standard of quality of drugs sold throughout the State. It is advised that the work be continued during the coming year upon essentially the same plan as

that pursued in the past, and that new localities be visited and a still greater variety of samples be collected. I desire again to express the opinion that the greater number of mistakes which are made by pharmacists result from ignorance or carelessness rather than from a deliberate intent to deceive or defraud, or willful determination to transgress the law, and that the information and warning received through the notifications of the board are sufficient, in the great majority of cases, to secure the desired reform without a resort to legal proceedings. If articles were purchased for analysis indiscriminately from the whole range of the pharmacopœia, I have no doubt that a decided improvement in the quality of drugs sold throughout the State would be observed from year to year, and if the successive reports seem to show no apparent diminution in the ratio of adulterated or impure drugs to those of good quality which are offered for sale, it is to be remembered that only those articles which are considered most likely to be of inferior quality are collected for examination.

Respectfully submitted.

WILLIS G. TUCKER,
Analyst.

CHEMICAL LABORATORY OF THE ALBANY MEDICAL COLLEGE,
ALBANY, N. Y., *January* 1, 1891.

[redacted]

Report of Professor [redacted] Caldwell.

[redacted]

[redacted]

Sir,—I have the honour to submit herewith my report as public analyst for the year 1894.

A summary of the results obtained in the examination of [redacted] samples is given in the following table:—

Table I.

[redacted]	[redacted]	Per cent. adulterated
[redacted]	[redacted]	5·7
[redacted]	[redacted]	4·5
[redacted]	[redacted]	16·5
[redacted]	[redacted]	14·3
[redacted]	[redacted]	20·3
[redacted]	[redacted]	6·3
[redacted]	[redacted]	6·7
[redacted]	[redacted]	.....
[redacted]	[redacted]	22·2

[redacted] claims that while the [redacted] of the preparation [redacted] are quite inherent with [redacted] keep that [redacted] will not contain [redacted] The [redacted] of the [redacted] illegitimate with [redacted] samples as shown in Table V [redacted] anywhere from four [redacted] two-thirds to one-fifth to nearly [redacted] My [redacted] is informed that these capsules are

filled by many of the druggists by simply scooping the empty cases through the powder.

Quinine in one form or another appears to be used more than ever before. During the season when the grippe prevailed unusually large quantities were required.

Of tincture of opium a large quantity is used by street railway companies in their veterinary practice. The Pharmacopœia requirement that the powdered opium shall be used in making this tincture is rarely observed; hence, in part, the low quality of the preparation.

There is evident room for improvement in the quality of the hypodermic tablets of sulphate of morphia, the percentage of condemned samples being almost as great as of tincture of opium. One firm that is largely engaged in the manufacture of tablets has expressed some dissatisfaction with the work of your analyst because of the low results obtained on nearly all the samples said to be put up by them. The method of analysis is in all cases precisely the same, even down to the smallest details; usually not less than six estimations are carried along at the same time, distinguished from one another only by their State Board of Health numbers. Not till the final calculation of the results and the recording of the same in the note-book, is the connection between the number of the sample and the name of its manufacturer noticed. Thus it not infrequently happens that, without any knowledge that I am doing so, I carry two samples of the same manufacture, collected at different stores, through the analytical processes at the same time. If with the samples of one manufacturer there is uniformity in low results, there is, on the other hand, like uniformity in high results with samples of some other make. Add to this the two additional analyses made of every sample that on the first analysis of one portion only is shown to be below the standard, and it seems to me to be well established that the correctness of the results finally reported to you cannot be disputed with any show of reason, and that the only fair course left for the manufacturer who feels aggrieved is to raise the standard of his goods. This course has been followed in more than one instance.

A few samples of cheap teas were purchased early in the year for a beginning in the examination of the teas and coffees sold in the State. The results of the analyses of these samples are given

in table IX, following. The composition of genuine tea varies so widely that chemists are not yet agreed regarding the extent to which judgment as to the quality of a tea or its freedom from sophistication can be based on the results of a chemical analysis. The proportions of two of the constituents of these teas are, however, so far outside of the widest limits of variation of genuine tea, that the evidence of their adulteration is sufficiently strong. These constituents are the ash and the tannin. Of the former constituent, Eder found as the results of thirty-four recent analyses from 5.3 to 5.9 per cent; and other authorities state that there should not be more than six per cent of ash in any tea. In these samples reported on, the ash ranges from eight to over ten per cent. Of tannin Eder found in no case less than 9.7 per cent, and in green teas he found as much as 22.5 per cent. In our own samples the proportion of tannin was in no case more than a little above four per cent, and in some cases it fell as low as one per cent. Whether these teas are worth even the ridiculously low prices charged for them, is a question that cannot be answered by a chemical analysis.

During the coming year I propose to make as thorough an examination of the coffee sold in the State as time will permit.

At your request a sample of Madame A. Ruppert's "Face Bleach" was purchased, an agency having been found in Rochester, and analyzed especially for mercury. It was found to contain 22.3 grains of mercuric chloride in one bottle of about six ounces capacity. In the directions accompanying the bottle, a copy of which follows, it is seen that the use of three bottles is prescribed, and that quite serious temporary effects are expected to follow its application.

MADAME A. RUPPERT'S | Trade mark. | FACE BLEACH.

Directions.—Wash the face well with Madame A. Ruppert's Complexion Soap, rinse, take a soft cloth or sponge, moisten the skin with the Face Bleach (do not get in eyes or mouth) upon retiring and rising. Should the skin become irritated enough to annoy, discontinue one day and apply Madame Ruppert's Egyptian Balm one evening, after which reapply the bleach; do not be alarmed if the bleach should cause the skin to break out; for should there be any roughness or impurity under the skin it will certainly draw it to the surface, which is the only thorough way;

after which it cuts the dead skin and leaves the face smooth and clear as an infant's. I ask only this favor of my patrons, that they persevere and do not neglect to use it as directed. (It usually requires three bottles Face Bleach to thoroughly clear the complexion.) The bleach is harmless and as represented. None genuine without my photograph and signature on label.

MADAME A. RUPPERT,

Complexion Specialist, 6 East Fourteenth St., New York city.

During the few minutes that my collector was in the room of the agency two customers came in, it may be inferred that Madame Ruppert meets with success in this most reprehensible business.

It is pleasant to receive evidence brought to me by my collector from his various trips, that the feeling of hostility to this branch of the work of the board of health has nearly died out, and that pharmacists as well as manufacturers are coming more and more to regard it as affording protection to their best interests.

The details of the analytical results obtained are given in the following tables:



982	March	22, 1890	T. A. Walsh	Yonkers	Lehn & Fink.....	None.
983	March	22, 1890	A. Clark	Poughkeepsie	Böehringer & Söhn.....	None.
984	March	20, 1890	J. G. Reevs.....	Yonkers	Lazelle, Dalley & Co.....	Slight.
985	March	22, 1890	I. Caldwell.....	Newburgh	Keasbey & Mattison	None.
1039	October	7, 1890	Dean & Guilfoyle...	Binghamton.....	Lazelle, Dalley & Co.....	None.
1040	October	7, 1890	J. L. Everitt.....	Elmira.....	Tarrant & Co	None.

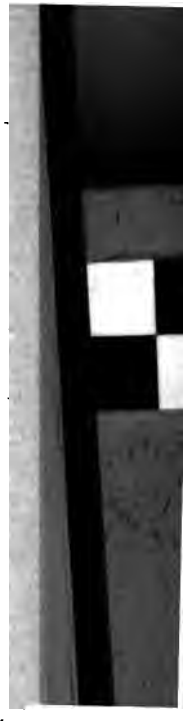


TABLE III

Parcel Post Packages Received

Number of sample.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
763	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
778	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
781	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
782	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
798	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
799	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
800	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
801	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
802	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
803	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
808	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
809	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
810	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
811	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
827	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
828	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
829	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
830	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
831	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]
832	[illegible]	[illegible]	[illegible]	[illegible]	400	[illegible]

*Obsolete.

833	December 26, 1889	Row & Donnelly	Troy	Keasbey & Mattison	200	181.7
834	December 23, 1889	S. C. Bradt	Albany	J. E Moore	200	155.9
849	December 27, 1889	N. H. Kittle	Schenectady	Keasbey & Mattison	200	193.6
850	December 28, 1889	J. W. Cone	Utica	H. Thayer & Co	200	219.1
857	December 27, 1889	C. W. Striker	Amsterdam	C. W. Striker	200	206.9
858	December 26, 1889	H. M. Sweet	Cohoes	Keasbey & Mattison	200	190.9
859	December 24, 1889	A. R. Miller	Albany	Upjohn & Co	200	207.1
860	December 24, 1889	J. E. Miller	West Troy	H. Thayer & Co	300	305.4
872	December 27, 1889	Bradford & Dickinson	Amsterdam	L. J. Finch	200	203.0
873	December 26, 1889	Drake & Moffitt	Troy	Keasbey & Mattison	500	487.0
874	December 27, 1889	M. W. Reid	Amsterdam	Keasbey & Mattison	200	224.6
877	December 22, 1889	O. Scholz	Albany	Sharpe & Dohm	200	190.9
878	December 26, 1889	C. H. Shacklady	Troy	L. J. Finch	500	498.8
879	December 23, 1889	J. W. Heller & Co	Albany	W. R. Warner & Co	300	297.5
880	December 23, 1889	T. W. Nellis	Albany	Keasbey & Mattison	200	184.6
883	December 24, 1889	R. P. Turnard	West Troy	W. H. Schiefflin & Co	300	291.9
885	December 23, 1889	J. H. Bandorf	Albany	Keasbey & Mattison	200	197.9
886	December 24, 1889	G. Boucher	Albany	J. E. Moore	200	190.7
887	December 23, 1889	Bassett & Brumaghim	Albany	Bassett & Brumaghim	200	195.9
888	December 27, 1889	E. W. Clark	Amsterdam	E. W. Clark	200	199.9
890	December 28, 1889	W. Blaikie	Utica	Keasbey & Mattison	500	487.0
891	December 23, 1889	F. J. Smith	Albany	Upjohn & Co	200	208.0
892	December 23, 1889	Dalrymple & Warner	Albany	Keasbey & Mattison	200	193.3
893	December 27, 1889	G. E. Duryee	Schenectady	Upjohn & Co	200	205.6
894	December 26, 1889	M. McDermott	Cohoes	McKesson & Robbins	300	302.4
902	December 27, 1889	J. S. Calkin	Cohoes	Parke Davis & Co	200	240.8
903	December 26, 1889	C. H. Wiberley	Troy	Keasbey & Mattison	200	191.0
904	December 26, 1889	W. H. Wilkinson	Troy	Parke Davis & Co	200	200.7
905	December 24, 1889	G. H. Hutchinson	West Troy	Keasbey & Mattison	200	193.5
922	February 27, 1890	C. H. Butler	Oswego	Keasbey & Mattison	300	300.9
923	February 27, 1890	Gauntlett & Brooks	Ithaca	W. S. Merrill & Co	200	165.4

Table III.—(Concluded.)

Number of sample	Source of the sample					Value of the sample	
	Date of collection.	Of whom purchased.	Where purchased.	Sold to be put up by		Claimed.	Found.
924	February 27, 1890	G. C. Platt	Ithaca	[illegible]		[illegible]	[illegible]
925	February 27, 1890	Hoskin & Todd	Ithaca	[illegible]		[illegible]	[illegible]
934	March 1, 1890	Osborn Drug Co.	Auburn	[illegible]		[illegible]	[illegible]
956	March 20, 1890	E. A. Houston	Yonkers	[illegible]		[illegible]	[illegible]
958	March 20, 1890	L. J. Schlessinger	Yonkers	[illegible]		[illegible]	[illegible]
960	March 22, 1890	A. Clark	Poughkeepsie	[illegible]		[illegible]	[illegible]
961	March 22, 1890	C. B. Bowne	Poughkeepsie	[illegible]		[illegible]	[illegible]
969	March 22, 1890	Estate of R. Doyo	Rondout	[illegible]		[illegible]	[illegible]
989	March 22, 1890	L. G. Wiggins	Newburgh	[illegible]		[illegible]	[illegible]
991	March 21, 1890	J. T. Joslin	Newburgh	[illegible]		[illegible]	[illegible]
992	March 21, 1890	Kingston's Pharmacy	Newburgh	[illegible]		[illegible]	[illegible]
993	March 21, 1890	Wm. Doderer	Newburgh	[illegible]		[illegible]	[illegible]
994	March 22, 1890	T. J. B. Clarke	Kingston	[illegible]		[illegible]	[illegible]
996	March 21, 1890	George Kraft	Newburgh	[illegible]		[illegible]	[illegible]
997	March 20, 1890	C. C. Finkle	Yonkers	[illegible]		[illegible]	[illegible]
998a	March 21, 1890	Spore & Ettinge	Kingston	[illegible]		[illegible]	[illegible]
1010	October 7, 1890	J. G. West	Binghamton	[illegible]		[illegible]	[illegible]
1011	October 6, 1890	J. Bartholomew	Elmira	[illegible]		[illegible]	[illegible]
1018	October 7, 1890	Tupper & McKean	Binghamton	[illegible]		[illegible]	[illegible]
1019	October 7, 1890	G. W. Bigg & Co.	Binghamton	[illegible]		[illegible]	[illegible]
1029	October 6, 1890	Ingraham Bros.	Elmira	[illegible]		[illegible]	[illegible]
1030	October 7, 1890	J. L. Everitt	Elmira	[illegible]		[illegible]	[illegible]

1031	October 7, 1890	W. S. Smith & Sons...	Binghamton.....	Parke Davis & Co ...	200	310.7
1032	October 6, 1890	W. R. W. Pound.....	Elmira.....	W. R. Warner & Co...	200	209.2
1033	October 7, 1890	T. H. Wheeler.....	Binghamton.....	Sharpe & Dohm	200	195.5
1035	October 6, 1890	T. S. Flood.....	Elmira.....	W. R. Warner & Co...	200	202.2
1036	October 7, 1890	N. W. Waldron.....	Binghamton.. ...	Keasbey & Mattison ..	200	192.0
1079	November 4, 1890	D. Kingston	Newburgh	Keasbey & Mattison ..	300	275.0
1099	November 17, 1890	A. B. Brooks	Ithaca	W. S. Merrill & Co ...	200	168.2

*Bi-sulphate.

TABLE IV.

Capsules of Quinine Sulphate.

Number of sample.	History of the Sample.				Grains of Crystallized Quinine Sulphate per 100 Capsules.	
	Date of collection.	Of whom purchased.	Where purchased.	Said to be put up by.	Claimed.	Found.
737	September 19, 1889	A. C. Anthony	Buffalo	A. C. Anthony	200	196.7
744	November 1, 1889	Wm. Muench	Syracuse	Wm. Muench	200	195.0
745	November 1, 1889	Chas. Hubbard & Co.	Syracuse	Chas. Hubbard & Co.	200	277.7
746	November 2, 1889	J. C. Bowe	Syracuse	J. C. Bowe	500	586.1
747	November 1, 1889	Newton & Hickock	Syracuse	Newton & Hickock	200	209.6
750	November 1, 1889	Corsaw & Barnum	Syracuse	Corsaw & Barnum	200	193.0
756	November 1, 1889	R. E. Smith	Syracuse	R. E. Smith	200	239.3
757	November 1, 1889	Kenyon, Potter & Co.	Syracuse	Kenyon, Potter & Co.	500	543.9
758	November 2, 1889	Brown & Dawson	Syracuse	Brown & Dawson	500	524.4
759	November 2, 1889	W. B. Bissell	Syracuse	W. B. Bissell	500	559.0
760	November 1, 1889	R. Bodden	Syracuse	R. Bodden	200	190.5
761	November 1, 1889	W. L. Tucker	Syracuse	W. L. Tucker	200	193.5
762	November 2, 1889	W. D. Tallman	Syracuse	W. D. Tallman	200	251.2
764	November 2, 1889	J. C. Auchampaugh	Syracuse	J. C. Auchampaugh	500	579.3
767	November 1, 1889	E. B. Covert	Syracuse	E. B. Covert	200	193.2
769	November 2, 1889	Derby Drug House	Syracuse	Derby Drug House	300	314.5
787	November 30, 1889	F. L. Zimmerman	Rochester	F. L. Zimmerman	200	237.1
855	December 23, 1889	L. H. Gaus	Albany	L. H. Gaus	200	213.2
856	December 27, 1889	Powell & Gilbert	Amsterdam	Powell & Gilbert	200	219.0
871	December 28, 1889	J. H. Sheehan & Co.	Utica	Parke Davis & Co.	200	209.6
881	December 27, 1889	W. Sauter	Schenectady	W. Sauter	200	207.0

882	December 26, 1889	C. H. Bosworth	Troy	C. H. Bosworth	200	230.7
884	December 24, 1889	C. H. Gaus	Albany	Keasbey & Mattison	200	191.4
921	March 1, 1890	S. Grant	Ithaca	S. Grant	200	208.8
932	March 11, 1890	H. L. Adams	Auburn	H. L. Adams	300	277.2
933	March 11, 1890	L. Hunt	Auburn	L. Hunt	200	151.1
935	March 11, 1890	C. H. Sager Co.	Auburn	C. H. Sager Co.	200	197.4
953	March 20, 1890	F. Herdling	Yonkers	F. Herdling	500	400.2
957	March 22, 1890	J. V. Humphrey	Poughkeepsie	J. V. Humphrey	200	188.9
959	March 22, 1890	Wood & Tittamer	Poughkeepsie	Wood & Tittamer	200	175.1
990	March 20, 1890	E. Spock	Yonkers	E. Spock	200	199.7
998b	March 22, 1890	Cooper & Hardenburgh	Kingston	Cooper & Hardenburgh	200	230.1
1012	October 7, 1890	H. A. Smith	Binghamton	H. A. Smith	200	196.2
1013	October 7, 1890	H. D. Palmer	Binghamton	H. D. Palmer	200	274.8
1014	October 7, 1890	Elmira Drug Co	Elmira	Elmira Drug Co	200	248.7
1015	October 7, 1890	B. D. Niles	Elmira	B. D. Niles	200	212.4
1028	October 7, 1890	W. M. Quirk	Binghamton	W. M. Quirk	200	209.4
1034	October 7, 1890	J. Schnell	Binghamton	J. Schnell	200	197.9

TABLE V.

CITRATE OF IRON AND QUININE.

Number of sample	HISTORY OF THE SAMPLE.				ASSAY.
	Date of collection.	Of whom purchased.	Where purchased.	Said to be put up by.	Per cent of quinine found.
779	September 20, 1889	Bentsoon & Mosher	Buffalo	E. R. Squibbs & Co	11.59
770	September 1, 1889	Keegen, Vetter & Co	Syracuse	Billings, Clapp & Co	10.95
805	November 20, 1889	H. Veilman	Rochester	W. H. Schieffelin & Co	10.72
806	November 20, 1889	O. J. & J. A. Bryan	Rochester	E. R. Squibbs & Co	10.98
824	November 20, 1889	F. L. Zimmerman	Rochester	Chas. Pfizer & Co	10.79
823	November 20, 1889	H. J. Strassenburgh	Rochester	Lehn & Fink	10.64
861	December 26, 1889	Drake & Moffitt	Troy	Chas. Pfizer & Co	11.27
862	December 26, 1889	W. B. Smith	Troy	Chas. Pfizer & Co	10.73
869	December 27, 1889	Powell & Gilbert	Amsterdam	Chas. Pfizer & Co	11.62
870	December 24, 1889	J. E. Miller	West Troy	Billings, Clapp & Co	11.38
886	December 24, 1889	J. VP. Townsend	Albany	McIntyre & Embury	11.56
926	February 27, 1890	Haskin & Todd	Ithaca	Mallinckrodt & Co	10.65
927	February 27, 1890	S. Grant	Ithaca	McKesson & Robbins	11.04
936	March 1, 1890	The Osborn Drug Co	Auburn	Chas. Pfizer & Co	12.38
962	March 20, 1890	T. A. Walsh	Yonkers	Lehn & Fink	14.48
970	March 22, 1890	E. W. Knapp	Rondout	Lazelle, Dalley & Co	9.77
995	March 21, 1890	I. C. Chapman	Newburgh	Chas. Pfizer & Co	12.2
998a	March 21, 1890	P. Mitchell	Yonkers	McKesson & Robbins	10.86
1016	October 7, 1890	J. E. Browne & Co	Binghamton	Billings, Clapp & Co	10.57
1020	October 7, 1890	O. W. Biggs & Co	Elmira	Milne & Co	8.27
1071	November 3, 1890	C. C. Finkle	Yonkers	Tarrant & Co	9.77

TABLE VI.

PILLS OF MORPHINE SULPHATE.

Number of sample.	History of the Sample.				Grains of Crystallized Morphine Sulphate per 100 Pills.	
	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Said to be put up by.	Claimed.	Found.
713	September 19, 1889	F. L. Powell	Buffalo	McKesson & Robbins	25.0	20.91
752	November 1, 1889	Coogan & Quigley	Syracuse	J. E. Moore	25.0	23.80
753	November 1, 1889	R. E. Smith	Syracuse	J. E. Moore	25.0	23.81
782	November 29, 1889	J. Jardine	Rochester	Parke, Davis & Co	25.0	22.28
789	November 29, 1889	Chambers & Co	Rochester	Keasbey & Mattison	25.0	25.11
791	November 30, 1889	C. Dunning	Rochester	W. R. Warner & Co	25.0	22.82
837	December 23, 1889	Dalrymple & Warner	Albany	Keasbey & Mattison	25.0	11.03
836	December 23, 1889	Bassett & Brumaghim	Albany	Upjohn & Co	25.0	22.34
839	December 23, 1889	W. Elmendorf	Albany	J. E. Moore	12.5	12.26
840	December 28, 1889	E. Steinfuhrer	Schenectady	J. E. Moore	25.0	23.5
864	December 27, 1889	C. W. Striker	Amsterdam	Keasbey & Mattison	25.0	23.81
865	December 27, 1889	W. Sauter	Schenectady	J. E. Moore	25.0	23.83
866	December 23, 1889	L. Sauter	Albany	McKesson & Robbins	25.0	21.01
867	December 26, 1889	C. H. Shacklady	Troy	W. H. Schieffelin & Co	25.0	22.81
914	February 21, 1890	C. H. Butler	Oswego	Keasbey & Mattison	25.0	21.62
915	February 21, 1890	D. M. Mead	Oswego	Parke, Davis & Co	25.0	23.35
920	February 27, 1890	White & Burdick	Ithaca	Keasbey & Mattison	12.5	9.98
929	March 1, 1890	W. Smith	Auburn	L. J. Finch	12.5	14.25
930	March 1, 1890	A. H. Hamilton	Auburn	Sharpe & Dohm	25.0	23.95
949	March 21, 1890	Spore & Eltinge	Kingston	Keasbey & Mattison	12.5	11.74

TABLE VI. *Concluded.*

Number of sale	History of the Rebate.				Weight on which rebate was paid.	
	Date of collection.	Of whom purchased.	Where purchased.	Paid to be paid upon	Claimed.	Allowed.
950	March 21, 1890	I. Caldwell	Newburgh	P. J. Noyes	26 0	17 02
961	March 21, 1890	A. DeW. Jones	Newburgh	J. P. Moore	26 0	24 71
971	March 21, 1890	L. Y. Wiggins	Newburgh	Sharpe & Dohm	12 0	12 01
973	March 21, 1890	C. B. Bowne	Poughkeepsie	J. P. Moore	26 0	24 00
975	March 21, 1890	T. Merritt	Newburgh	Beasley & Mattison	26 0	20 07
1004	October 7, 1890	H. D. Palmer	Binghamton	Sharpe & Dohm	26 0	22 11
1005	October 7, 1890	J. P. Brown & Co	Binghamton	Henry Thayer & Co	12 0	10 21
1026	October 7, 1890	J. T. Van Nest, Jr	Clinton	Upjohn & Co	26 0	22 87
1045	November 4, 1890	C. B. Bowne	Poughkeepsie	J. P. Moore	26 0	24 80
1049	November 4, 1890	H. Ennis	Newburgh	Sharpe & Dohm	26 0	24 08

TABLE VII.

HYPODERMIC TABLETS OF MORPHINE SULPHATE.

Number of sample.	History of the Sample.				Grains of Crystallized Morphine Sulphate per 100 Tablets.	
	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Said to be put up by.	Claimed.	Found.
755	November 1, 1889	Kenyon, Potter & Co..	Syracuse..... ...	Hazard, Hazard & Co..	25.0	22.16
835	December 27, 1889	N. H. Kittle.....	Schenectady	Plummer & Morgan ..	16.6	11.18
838	December 28, 1889	A. T. Veeder	Schenectady	The Fraser Tablet Co..	25.0	18.50
863	December 28, 1889	G. L. Hill.....	Utica	The Fraser Tablet Co..	25.0	19.60
868	December 28, 1889	J. H. Sheehan & Co...	Utica	The Norwich Pharm. Co	25.0	20.86
928	February 27, 1890	White & Burdick	Ithaca.....	The Fraser Tablet Co..	25 0	24 00
952	March 20, 1890	G. B. Wray & Co.....	Yonkers	The Fraser Tablet Co..	25.0	23.66
953	March 21, 1890	E. R. Post & Co	Newburgh	The Fraser Tablet Co..	25.0	18.96
954	March 22, 1890	J. V. Humphrey.....	Poughkeepsie	The Fraser Tablet Co..	25.0	21.88
974	March 22, 1890	Van Deusen Bros.....	Kingston	The Fraser Tablet Co..	25.0	9.71
1006	October 7, 1890	Gerity Bros	Elmira	Parke, Davis & Co	25.0	22.70
1007	October 6, 1890	J. Bartholomew	Elmira	The Fraser Tablet Co..	25.0	18.15
1008	October 7, 1890	H. A. Smith.....	Binghamton.....	The Fraser Tablet Co..	25.0	18.56
1009	October 6, 1890	Ingraham Bros	Binghamton.....	The Frazer Tablet Co..	25.0	19.77
1025	October 7, 1890	Elmira Drug Co	Elmira	Harvey & Co....	25.0	20.23
1027	October 6, 1890	Davis & Wightman ...	Elmira	Sharpe & Dohm	16.6	15.37
1046	November 4, 1890	Strickler & Schwartz..	Poughkeepsie	The Fraser Tablet Co..	25.0	22.9
1047	November 4, 1890	E. R. Post & Co	Newburgh	The Frazer Tablet Co..	25.0	19.53
1048	November 4, 1890	J. J. E. Harrison.....	Newburgh	Plummer & Morgan ..	25.0	16.01
1091	November 17, 1890	A. B. Brooks	Ithaca.....	Hazard, Hazard & Co..	12.5	10.52

TABLE VIII.

TINCTURE OF OPIUM.

Number of sample.	HISTORY OF THE SAMPLE.				Grains of morphia in 100 grams of tincture.
	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Said to be put up by.	
774	September 21, 1889	E. J. Smith	Buffalo	E. J. Smith	0.98
776	September 21, 1889	McArthur & Co	Buffalo	McArthur & Co.	0.95
778	November 2, 1889	J. C. Bowe	Syracuse	J. C. Bowe	0.90
793	November 2, 1889	J. C. Auchampaugh	Syracuse	J. C. Auchampaugh	0.97
807	November 1, 1889	Kenyon, Potter & Co.	Syracuse	Kenyon, Potter & Co.	1.22
815	November 29, 1889	Curran & Goler	Rochester	Curran & Goler	1.32
816	November 30, 1889	C. Dunning	Rochester	C. Dunning	1.33
818	November 30, 1889	Dake Bros.	Rochester	Dake Bros.	0.94
841	December 26, 1889	E. H. Clark	Troy	E. H. Clark	0.95
842	December 28, 1889	E. W. Clark	Amsterdam	E. W. Clark	0.38
843	December 24, 1889	J. D'P. Townsend	Albany	J. D'P. Townsend	0.90
844	December 26, 1889	W. H. Wilkinson	Troy	W. H. Wilkinson	0.63
845	December 27, 1889	Bradford & Dickinson	Amsterdam	Bradford & Dickinson	0.84
846	December 22, 1889	Turner Bros.	Albany	Turner Bros.	0.56
847	December 23, 1889	H. B. Clement & Co.	Albany	H. B. Clement & Co.	1.24
848	December 23, 1889	Chas. Van Loon	Albany	Chas. Van Loon	0.35
851	December 26, 1889	M. McDermott	Cohoes	M. McDermott	0.91
852	December 23, 1889	S. C. Hodgkins	Albany	S. C. Hodgkins	0.66
853	December 24, 1889	Geo. Boucher	Albany	Geo Boucher	1.25
854	December 26, 1889	J. S. Calkins	Cohoes	J. S. Calkins	0.66
875	December 27, 1889	Geo. E. Duryee	Schenectady	Geo. E. Duryee	0.64

876	December 23, 1889	J. W. Heller	Albany	J. W. Heller	0.91
910	February 21, 1890	C. H. Butler	Oswego	C. H. Butler	1.38
911	February 21, 1890	S. T. Kingston	Oswego	S T. Kingston	0.60
912	February 21, 1890	C. J. Vowinkle	Oswego	C. S. Vowinkle	0.98
913	February 21, 1890	D. M. Mead	Oswego	D. M. Mead	0.47
916	February 27, 1890	Gauntlett & Brooks	Ithaca	Gauntlett & Brooks	0.66
917	February 27, 1890	McClune & Fisher	Ithaca	McClune & Fisher	0.52
918	February 27, 1890	C. C. Platt	Ithaca	C. C. Platt	0.64
919	February 27, 1890	S. Grant	Ithaca	S. Grant	0.44
931	March 1, 1890	H. L Adams	Auburn	H. L. Adams	0.82
937	March 1, 1890	C. H. Sager Co.	Auburn	C. H. Sager Co.	0.80
938	March 1, 1890	A. H. Hamilton	Auburn	A. H. Hamilton	0.99
939	March 1, 1890	L. Hunt	Auburn	L. Hunt	0.32
940	February 27, 1890	White & Burdick	Ithaca	White & Burdick	1.01
941	February 27, 1890	Haskin & Todd	Ithaca	Haskin & Todd	0.85
945	March 20, 1890	G. B. Wray & Co.	Yonkers	G. B. Wray & Co	1.41
946	March 22, 1890	Wood & Tittamer	Poughkeepsie	Wood & Tittamer	1.16
947	March 22, 1890	Estate of R. Deyo	Rondout	Estate of R. Deyo	1.00
948	March 21, 1890	W. Doderer	Newburgh	W. Doderer	1.01
963	March 21, 1890	J. R. Gorham	Newburgh	J. R. Gorham	0.88
964	March 22, 1890	J. T. Joslin	Newburgh	J. T. Joslin	0.98
965	March 22, 1890	T. Merritt	Newburgh	T. Merritt	0.38
966	March 21, 1890	Strickler & Schwartz	Poughkeepsie	Strickler & Schwartz	0.52
976	March 20, 1890	J. G. Reevs	Yongers	J. G. Reevs	1.31
977	March 21, 1890	L. Y. Wiggins	Newburgh	L. Y. Wiggins	1.08
978	March 22, 1890	Van Deusen Bros.	Kingston	Van Deusen Bros	0.90
979	March 21, 1890	E. R. Post & Co.	Newburgh	E. R. Post & Co	1.19
986	March 21, 1890	C. C. Finkle	Yonkers	C. C. Fingle	0.59
987	March 22, 1890	E. C. Bolton	Poughkeepsie	E. C. Bolton	0.65
988	March 22, 1890	F. J. R. Clarke	Kingston	F. J. R. Clarke	0.82
1000	October 7, 1890	R. W. Mosher	Binghamton	R. W. Mosher	0.81

TABLE VIII — (*Concluded*).

Number of sample.	History of the Sample.				Grains of morphia in 100 grams of tincture.
	Date of collection.	OF WHOM PURCHASED.	Where purchased.	Said to be put up by.	
1001	October 6, 1890	Elmira Drug Co	Elmira	Elmira Drug Co	0.74
1002	October 6, 1890	Gerity Bros	Elmira	Gerity Bros	1.25
1003	October 6, 1890	J. F. Van Nort, Jr	Elmira	J. F. Van Nort, Jr	0.48
1021	October 7, 1890	W. R. W. Pound	Elmira	W. R. W. Pound	0.43
1022	October 8, 1890	J. G. West	Binghamton	J. G. West	0.77
1023	October 7, 1890	J. Mayer, Jr	Elmira	J. Mayer, Jr	0.42
1024	October 6, 1890	C. P. Pettit	Elmira	C. P. Pettit	0.73
1037	October 7, 1890	J. Schnell	Binghamton	J. Schnell	0.92
1038	October 7, 1890	Dean & Guilfoyle	Binghamton	Dean & Guilfoyle	0.80
1041	November 4, 1890	Humphrey & Forman	Poughkeepsie	Humphrey & Forman	1.04
1042	November 3, 1890	E. Spock	Yonkers	E. Spock	0.60
1043	November 4, 1890	I. Caldwell	Newburgh	I. Caldwell	0.68
1059	November 4, 1890	E. C. Bolton	Poughkeepsie	E. C. Bolton	0.93
1061	November 4, 1890	F. A. Greuzenbach	Newburgh	F. A. Greuzenbach	0.70
1074	November 3, 1890	C. C. Finkle	Yonkers	C. C. Finkle	0.80
1076	November 4, 1890	C. S. Bowne	Poughkeepsie	C. S. Bowne	0.70
1077	November 4, 1890	Barnes Bros	Poughkeepsie	Barnes Bros	0.94
1089	November 17, 1890	S. Grant	Ithaca	S. Grant	0.91

TABLE IX.

TEA DUST.

Number of sample.	History of the Sample.			Composition on Dry Substance.							
	Date of collection.	Of whom purchased.	Where purchased.	Water.	Pure ash.	Total nitrogen.	Theine nitrogen.	Theine.	Tannin.	Price per pound.
998 d	November 1, 1889	Geo. Baummer*.....	Syracuse.	6.46	9.10	4.12	.48	1.39	3.16	$0 20
				6.57	9.02	4.16	.45	1.31	3.38	.....
998 e	November 1, 1889	Andrew Bros.†.....	Syracuse.	4.72	9.84	3.53	.52	1.50	3.12	20
				4.88	9.63	3.73	.60	1.69	3.30	.....
998 f	November 1, 1889	A. & E. Young.....	Syracuse.	4.35	8.01	3.26	.63	1.81	1.72	6
				4.31	7.94	3.40	.57	1.61	1.63	.....
998 g	November 1, 1889	M. H. Stroub	Syracuse.	5.36	9.22	4.51	.73	2.14	4.16	15
				5.26	9.34	4.59	.80	2.35	4.20	.....
998 h	November 1, 1889	Whites' tea store‡.....	Syracuse.	6.65	10.20	4.20	.14	.41	1.02	20
				6.76	10.42	4.17	.14	.41	1.35	.....
999	November ——	J. Moses	Syracuse.	5.84	9.14	3.79	.34	.98	2.04	10
				6.00	9.22	3.91	.41	1.17	2.16	.....

*Set of picture cards given. † Chromo given. ‡ Ticket given towards China dish.

Respectfully submitted.

G. C. CALDWELL,
Analyst.

SANITARY CONDITION OF THE STATE

AND

SUMMARY OF MORTALITY REPORTED DURING THE YEAR.



SANITARY CONDITION OF THE STATE

AND

Summary of Mortality Reported During the Year.

The reports of vital statistics by local boards of health during 1890 have been the most complete of any year since the State Board of Health was established. Out of about 1,000 towns there were only twenty which have failed entirely to make any report of mortality; these represent a population of 25,000. Besides these there have been fifteen towns where returns have been very incomplete, and may be placed for that reason in the same category. As these have a total population of about 25,000, it may be said that the mortality of about 50,000 population of the State has failed to be recorded. This is less than one per cent of the population of the State. As, however, the lacking returns are for the most part from the more sparsely populated portions of the State, whose death rates under ordinary conditions would be low, it is not justifiable to assume that their failure to report their mortality would lessen the reported mortality to this degree as the total reported mortality of the State includes that of all the large cities. At a death rate of sixteen per 1,000 population annually there would be a lack of 800 deaths from this source. This is more than made up for, however, so far as the published mortality in the monthly bulletins is concerned, by the delay of many towns in sending in their returns promptly. Up to the close of the year there were received more than 5,000 death returns for the first eleven months of the year above the number which had been printed in the monthly bulletins, and it may be said that the total returns as they appear in each bulletin are less by at least 500 each month than the actual mortality, owing to the delinquency of registrars of the local boards of

health. The rule of the State Board of Health which requires them to make their reports of vital statistics to the central office by the fifteenth of each month, is to that degree neglected.

How much additionally should be allowed for deaths which entirely fail of being secured by the local boards can not be said with any accuracy, but it is not a very large amount. Some idea may be obtained by reference to the detailed report of the health districts, which is printed in this volume. A death rate that is inconsiderable, compared with the population, would indicate imperfect returns.

The bulletin of mortality of the State, which is issued monthly, comprises the returns of the cities of New York, Brooklyn, Yonkers, Albany and Buffalo, which are exempted from the supervision of the State Board of Health in regard to vital statistics, and also all returns of the remainder of the State received up to the time of its issue. All cities except the five mentioned, all incorporated villages, and all towns are required by law to appoint boards of health, and these are required to collect certificates of births, marriages and deaths occurring within their jurisdiction, and to send them, after having registered them, to the office of the State Board for registry and filing. From these the bulletins are compiled, and may be relied upon as fairly accurate of the specified localities; the variability is principally in the groups of unspecified localities noted as "rest of district," the space of the bulletin allowing of special mention of only the larger cities, villages and towns.

There have been printed in the bulletins for the first eleven months of the year the record of 102,040 deaths. The bulletin for December not having appeared at this writing, I will, as heretofore, report upon the mortality of the twelve months beginning with December, 1889. This allows of classifying the returns by seasons.

To secure as nearly as possible the actual mortality which has occurred during this period, I have added the returns of mortality which have been sent in during the year up to the 1st of January, 1891, after the issue of each bulletin, and also an estimate of delayed returns for the month of November, based on the average for the month preceding.

From this it appears that there were 117,100 deaths during the year from all causes. Disregarding the towns representing a

population of 50,000, which have been referred to as failing in their mortality returns during the year, and assuming the population of the entire State to be 6,000,000, which is about the amount by the last census, we have a death rate for the year of 19.50 per 1,000 population. If there be added the 800 deaths which I have estimated to have failed of report from the towns not reporting, we will have the death rate for the entire State for the year of 19.65 per 1,000 population. This may fairly be assumed to be the rate of mortality for the State during 1890.

[illegible] of Mortality of the

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1897											
December	7,000	1,407	21.0	180.00	31	106	70	11	106	44	42
1898											
January	6,750	1,386	20.5	205.33	37	96	71	11	106	41	39
February	6,687	1,346	20.1	201.30	44	94	69	11	105	41	39
March	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
April	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
May	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
June	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
July	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
August	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
September	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
October	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
November	6,600	1,346	20.4	203.94	41	93	68	11	104	41	39
Totals	79,287	16,157	20.4	203.94	485	1,116	811	132	1,251	491	468

[illegible] of Mortality of the

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1897											
December	6,600	1,407	21.3	213.18	39	106	68	11	104	39	37
1898											
January	6,457	1,386	21.5	214.65	39	96	71	11	104	39	37
February	6,395	1,346	21.0	210.49	44	94	69	11	104	39	37
March	6,347	1,346	21.2	212.00	41	93	68	11	104	39	37
April	6,305	1,346	21.3	213.28	41	93	68	11	104	39	37
May	6,267	1,346	21.5	214.65	41	93	68	11	104	39	37
June	6,235	1,346	21.6	215.86	41	93	68	11	104	39	37
July	6,205	1,346	21.7	217.00	41	93	68	11	104	39	37
August	79,000	1,346	21.3	213.18	41	111	81	11	104	39	37
September	6,273	1,346	21.7	214.51	41	111	81	11	104	39	37
October	6,251	1,346	21.6	214.36	41	111	81	11	104	39	37
November	6,230	1,346	21.6	214.36	41	111	81	11	104	39	37
December	7,209	1,407	21.7	216.00	41	106	68	11	104	39	37
Totals	104,150	16,157	21.5	214.36	485	1,271	748	132	1,251	1,404	444

[illegible] of Mortality of the

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1897											
December	6,400	1,351	27.4	136.25	39	117	80	[illegible]	73	39	39
1898											
January	13,450	1,327	18.5	99.78	39	117	80	[illegible]	98	45	39
February	9,200	1,270	27.5	224.40	37	94	69	[illegible]	98	39	39
March	7,864	1,772	22.5	127.25	45	72	56	2	98	39	39
April	7,400	1,856	25.1	135.45	51	73	45	1	73	257	45
May	6,334	1,720	27.1	139.16	41	73	53	[illegible]	61	108	34
June	6,100	1,316	21.3	217.70	39	69	43	1	98	251	39
July	17,000	1,620	20.5	217.37	34	103	69	[illegible]	45	39	39
August	10,400	4,400	42.3	292.79	49	107	58	[illegible]	35	98	39
September	9,211	2,356	29.6	236.45	39	104	65	[illegible]	61	39	39
October	8,600	2,665	31.7	255.96	39	100	61	[illegible]	62	45	45
November	8,200	2,190	26.5	146.66	39	111	69	[illegible]	262	74	37
Totals	110,660	27,859	31.3	256.78	492	1,372	752	4	951	1,477	299

* This table for 1897 has been increased by the addition of delayed returns

STATE BY MONTHS FOR 1888.

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
21	883	78	1,205	1,022	75	441	408	543	798	208	295	761	636
40	879	78	1,563	1,089	105	481	412	553	916	203	278	882	715
49	667	85	1,644	1,112	105	437	434	563	878	193	233	1,042	674
48	682	109	1,762	1,238	138	450	423	608	991	204	292	1,096	935
48	448	113	1,332	1,117	90	407	404	549	966	186	265	738	890
49	627	131	1,438	1,195	98	458	481	570	1,009	211	370	738	988
61	490	811	778	868	94	516	393	491	1,075	237	411	472	1,130
108	411	2,957	588	966	73	784	383	492	930	210	397	454	1,111
144	345	2,465	528	959	74	647	402	473	1,010	227	370	530	1,347
142	308	1,440	649	895	69	600	343	494	895	198	303	510	995
102	432	386	1,031	1,034	70	518	392	495	791	232	278	512	984
90	538	112	1,051	893	58	414	398	522	796	164	300	443	726
902	6,710	8,765	13,569	12,388	1,049	6,153	4,873	6,353	11,055	2,473	3,792	8,178	11,129

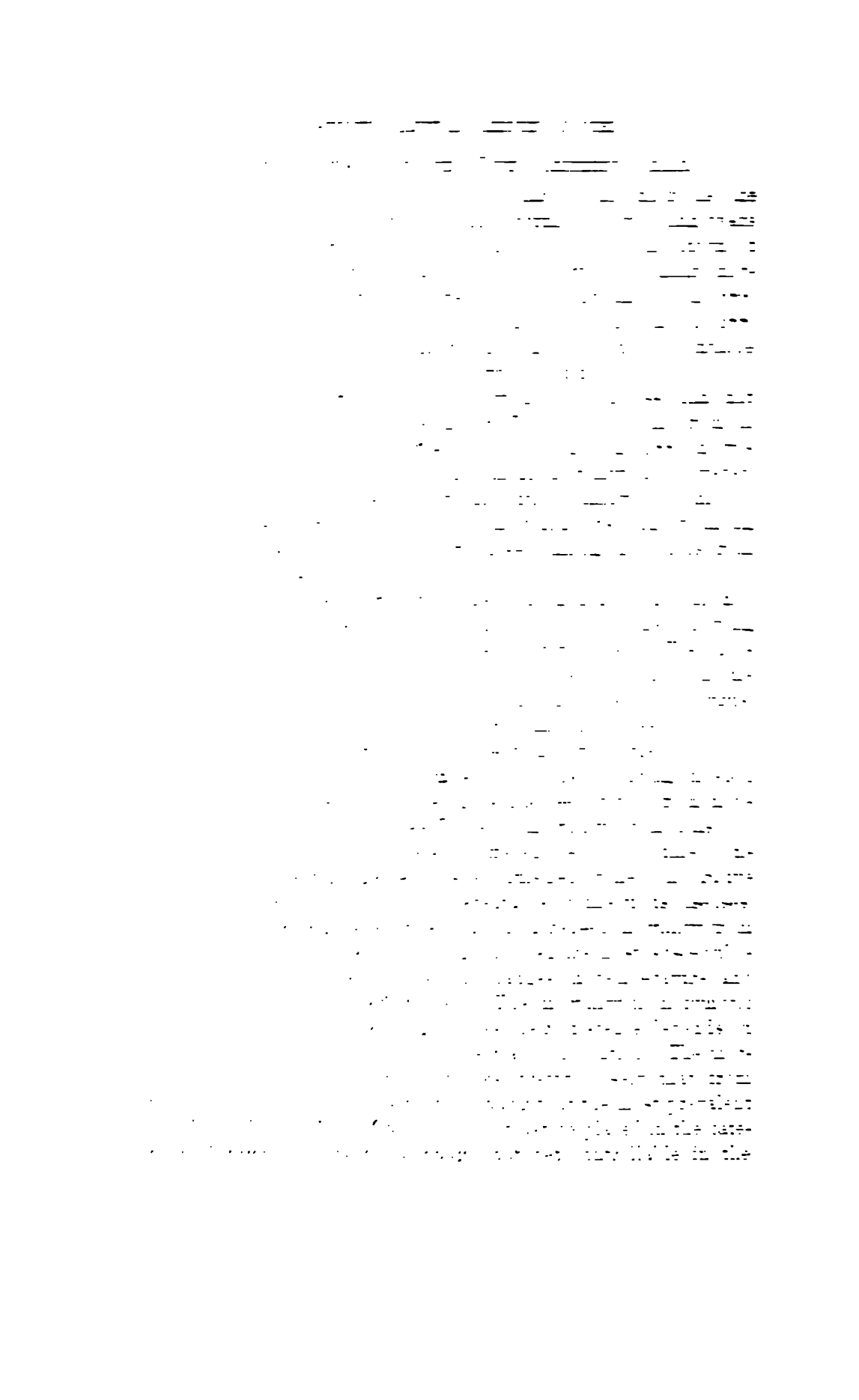
STATE BY MONTHS FOR 1889.

113	621	87	1,392	1,017	95	434	461	584	917	232	345	577	817
105	606	101	1,473	1,061	77	421	469	577	946	194	279	507	896
119	563	75	1,447	947	100	401	461	574	922	183	256	507	996
157	599	115	1,840	1,195	109	468	488	662	1,004	228	237	624	1,092
137	580	122	1,656	1,092	125	429	478	574	986	222	311	590	1,029
121	492	123	1,172	1,102	86	511	421	599	951	227	377	548	1,061
120	423	1,112	744	919	77	639	386	485	951	222	376	414	1,133
112	305	3,092	537	1,012	63	844	449	542	1,029	227	357	502	1,394
133	327	1,901	591	1,026	63	680	437	540	936	254	373	477	1,196
90	343	1,094	646	949	65	638	794	483	870	206	326	446	872
70	570	339	959	1,016	64	557	431	595	899	238	343	491	1,032
55	501	110	1,133	944	67	450	452	599	822	199	311	419	868
1,332	5,930	8,271	13,590	12,280	991	6,472	5,727	6,814	11,233	2,632	3,901	6,102	12,386

STATE BY MONTHS FOR 1890.*

84	546	110	1,631	1,131	83	461	466	657	949	240	288	455	1,046
114	534	98	3,847	1,801	95	542	553	724	1,107	277	333	653	1,969
92	518	82	1,950	1,304	74	477	415	556	927	209	264	515	1,399
110	514	94	1,929	1,238	99	511	471	709	1,051	235	314	520	1,663
77	436	97	1,781	1,138	75	599	484	691	1,046	220	330	460	1,578
68	420	142	1,538	1,077	95	539	508	691	999	273	371	436	1,554
90	364	1,087	972	984	83	679	497	541	1,000	237	452	347	1,433
133	293	2,916	706	1,073	60	1,024	497	543	1,092	242	553	395	1,718
153	233	2,192	666	1,064	70	871	442	537	1,125	236	512	375	1,749
102	247	1,196	710	1,027	47	768	418	520	871	236	375	450	1,712
84	382	360	1,001	1,061	71	635	485	597	884	238	366	476	1,538
62	467	124	1,207	1,019	74	518	435	554	851	208	387	409	1,388
1,169	4,954	8,498	17,938	13,917	926	7,624	5,671	7,320	11,902	2,851	4,545	5,485	18,747

received up to the end of the year, after issue of the monthly bulletins.



same way that the acute infectious diseases are; it has some value as a guide to the comparative measure of healthfulness. The proportion of these three, the infant mortality, the zymotic mortality and the mortality from consumption, gives us, according to their relative occurrence, the best gauge, if any, to the healthfulness of one year or period of time or locality as compared with another. These are exhibited in this table, in which the proportion of all deaths for the past six years that have occurred during infant life, from zymotic diseases and from consumption is exhibited.

A classification by seasons will best exhibit the comparative healthfulness for different periods of the year. The table below will show the actual number of deaths during the past three years, season by season, and also the relative proportion of deaths at the susceptible age, and from preventable causes.

COMPARATIVE MORTALITY FOR THE LAST SIX YEARS.

YEARS.	Total number of deaths.	Percentage of deaths under 5 years of age.	Zymotic deaths per 1,000 deaths from all causes.	Deaths from consumption per 1,000 deaths from all causes.
In 1885	80,407	37.30	222 17	139.78
In 1886	86,801	38.00	217.23	137.64
In 1887	96,453	36.30	227.80	120.36
In 1888	103,969	36.46	220.80	120.00
In 1889	104,219	36.85	210.84	117.94
In 1890	110,523	33.52	159.68	122.00
Average	97,062	36.70	206.53	125.45

This table shows that the mortality in early life as also from zymotic diseases is very considerably lower in the year just ended than in either of the years preceding it. In fact, although the total mortality is very much higher, the actual number of deaths from zymotic diseases is less than either of the six years.

There is an increase in the deaths from consumption. It is noteworthy that up to 1890, there is a steady decline in the proportion of deaths from this cause until this year, when there is a rise of four deaths per 1,000 above last year. While the proportion is still much lower than that of 1885, the number of actual deaths from this cause is 2,200 greater, as reported in 1890. Despite the proportionate decrease year by year, there has been a yearly increase in the actual reported number of deaths from consumption.

INFLUENCE OF SEASON ON MORTALITY.

There is a very considerable variation in the actual mortality as reported month by month, as is seen by the tables already exhibited. It will be found that year after year the month of July shows by far the largest actual mortality and also much the largest proportional mortality in early life and from zymotic diseases. Judging by the same standard the month of November is on an average the healthiest month in the year. The average number of reported deaths in July during the five years has been 10,252, or a daily mortality of 330; the average number of deaths per month for the same period has been 7,866, or a daily rate of 262. During November of this year there were 225 deaths daily, as reported in the bulletin, and this is exactly the average for the previous five years. Between these differences of individual months there is some constant variation.

The following table, which is a continuation of the one which was placed in the last annual report, will show in detail the mortality for each year, month by month.

MORTALITY

MONTHS.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
January:											
1885	6,571	2,163	32.9	111.20	42	92	64	....	127	177	29
1886	6,747	2,252	33.3	161.11	28	66	53	3	138	20	34
1887	7,671	2,822	36.8	162.91	61	72	65	21	101	347	30
1888	8,742	2,848	32.5	176.75	37	64	71	21	265	55	35
1889	8,337	2,983	35.2	170.32	35	89	51	15	242	164	29
1890	13,020	2,227	18.2	89.70	29	117	62	....	93	42	30
Totals	51,088	15,295	29.9	123.07	232	500	366	60	966	805	187
February:											
1885	6,606	2,288	34.2	125.37	40	52	70	....	126	154	41
1886	6,288	2,011	32.0	153.00	42	57	66	7	119	7	44
1887	6,653	2,439	36.8	159.00	39	57	46	21	79	239	28
1888	8,637	2,748	32.0	154.00	44	84	49	10	239	55	39
1889	8,183	2,933	35.8	170.00	32	71	30	9	324	136	30
1890	9,130	2,370	27.5	118.80	37	94	39	....	96	50	32
Totals	45,497	14,689	32.6	135.53	234	415	300	47	983	641	214
March:											
1885	7,391	2,561	34.6	146.08	40	60	71	....	135	180	63
1886	7,918	2,552	32.2	138.67	63	75	78	6	119	21	46
1887	7,830	2,551	32.5	211.11	42	72	54	24	98	152	42
1888	9,405	2,788	30.0	147.37	49	74	56	35	239	56	48
1889	9,547	3,381	35.4	167.50	43	69	47	1	386	150	33
1890	9,844	2,772	30.0	117.35	47	72	36	2	90	94	47
Totals	51,935	16,605	31.9	139.73	284	422	342	68	1,067	653	279
April:											
1885	7,016	2,275	32.5	228.90	31	68	75	1	141	191	44
1886	7,181	2,281	31.8	142.00	63	69	75	8	129	32	49
1887	7,967	2,443	30.6	136.20	56	56	75	12	112	111	45
1888	8,129	2,468	30.0	150.00	75	45	52	40	250	77	34
1889	9,078	3,116	34.5	174.20	45	78	64	2	363	148	47
1890	9,488	2,826	31.8	121.42	51	73	43	1	78	187	43
Totals	48,859	15,409	31.5	143.84	321	389	384	64	1,073	746	262
May:											
1885	6,542	2,094	32.2	154.70	53	55	74	..	122	165	38
1886	6,659	2,044	31.7	147.45	55	45	75	5	116	37	43
1887	7,528	2,457	32.6	153.65	52	37	66	42	114	96	41
1888	9,032	2,891	32.1	141.75	62	59	68	42	277	109	50
1889	8,357	2,773	33.2	155.91	42	63	37	....	276	108	40
1890	9,194	2,740	31.6	130 95	62	72	55	....	60	200	34
Totals	47,312	14,999	31.5	148.73	326	331	375	89	965	715	246
June:											
1885	6,204	2,483	40.0	238.55	37	54	74	3	106	128	32
1886	6,316	2,228	35.3	193.65	57	39	50	2	74	56	24
1887	7,484	2,020	40.0	240.00	57	54	67	7	109	65	26
1888	8,368	3,306	39.7	227.34	40	45	56	11	233	130	25
1889	8,370	3,632	43.4	241.82	27	45	59	....	154	64	20
1890	9,185	3,515	40.2	217.70	28	69	63	1	68	161	29
Totals	45,927	17,184	37.4	222.98	246	306	369	24	744	624	156

BY MONTHS.

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
58	443	104	1,078	1,028	93	329	371	404	691	148	165	425	701
192	546	73	1,184	1,008	96	332	327	464	717	142	232	485	673
67	406	78	1,454	1,057	72	361	365	453	754	178	224	693	812
40	879	78	1,563	1,089	105	481	412	553	916	203	278	882	715
105	606	101	1,473	1,061	77	421	469	577	946	194	279	507	896
114	534	98	3,847	1,801	95	542	553	724	1,107	277	333	653	1,969
486	3,414	532	10,599	7,044	538	2,466	2,497	3,175	5,131	1,143	1,511	3,655	5,766
53	412	89	1,396	929	95	302	338	437	712	149	190	456	564
105	437	70	1,110	946	87	324	347	431	687	157	222	461	555
39	423	87	1,144	952	86	348	357	443	686	149	204	643	583
49	667	85	1,644	1,112	105	437	434	563	878	193	233	1,042	674
119	563	75	1,447	947	100	401	461	574	922	183	256	507	996
92	518	82	1,950	1,304	74	477	415	556	927	209	264	515	1,399
457	3,020	488	8,691	6,190	547	2,289	2,352	3,004	4,812	1,041	1,369	3,624	4,771
67	352	113	1,684	1,083	118	329	368	481	812	165	200	467	603
129	490	76	1,590	1,129	106	395	418	474	853	193	234	660	758
48	497	624	1,203	664	103	367	377	535	839	197	260	775	857
48	668	107	1,732	1,218	137	441	422	593	970	204	289	1,090	926
157	599	115	1,840	1,195	109	468	488	662	1,004	228	237	624	1,092
110	514	94	1,929	1,238	99	511	471	709	1,051	235	314	520	1,663
559	3,120	1,129	9,978	6,527	672	2,511	2,544	3,457	5,529	1,222	1,534	4,136	5,899
56	326	106	1,441	1,049	94	347	395	487	761	81	236	522	564
123	380	89	1,188	1,125	90	353	385	483	830	173	251	550	733
30	479	112	1,341	1,146	100	434	432	512	844	207	282	833	747
48	448	113	1,332	1,117	90	407	404	549	966	186	265	738	890
137	580	122	1,656	1,092	125	429	478	574	986	222	311	590	1,029
77	436	97	1,781	1,138	75	509	484	691	1,046	220	330	460	1,578
361	2,649	639	8,739	6,667	574	2,569	2,578	3,296	5,433	1,089	1,675	3,693	5,541
47	319	136	1,038	1,033	94	331	345	407	707	161	312	387	717
89	394	123	835	1,085	73	355	363	443	711	186	331	445	850
27	540	142	1,098	1,052	71	379	378	445	870	191	359	714	814
49	627	131	1,438	1,195	98	458	481	570	1,009	211	370	738	988
121	492	123	1,172	1,102	86	511	421	599	951	227	377	548	1,061
68	420	142	1,538	1,077	95	539	508	691	999	273	371	436	1,554
401	2,792	797	7,119	6,544	517	2,573	2,496	3,150	5,247	1,249	2,120	3,268	5,984
46	319	680	643	814	78	834	328	432	703	172	277	356	587
72	380	465	626	911	74	382	323	470	714	189	298	397	702
30	475	887	587	948	56	516	404	458	784	190	362	597	805
61	490	811	778	868	94	516	393	491	1,015	237	411	472	1,130
120	423	1,112	744	919	77	639	386	485	951	222	376	414	1,133
90	364	1,087	972	984	83	679	497	541	1,000	237	452	347	1,433
419	2,451	5,042	4,350	5,444	462	3,066	2,331	2,877	5,227	1,247	2,176	2,583	5,780

MORTALITY

MONTHS.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro spinal fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.
July											
1885	9,318	5,066	54.4	401.37	41	51	59	4	59	37	14
1886	9,475	5,021	53.0	374.94	44	73	61	....	42	86	10
1887	11,463	6,049	52.7	449.44	71	102	61	12	79	76	15
1888	10,180	5,364	52.6	400.07	57	74	51	2	142	111	25
1889	10,206	5,263	51.4	374.46	46	117	61	1	80	43	14
1890	11,456	5,974	50.5	427.37	56	101	56	....	45	21	12
Totals	62,099	32,764	51.9	404.17	274	523	374	29	462	478	88
August											
1885	7,484	4,405	46.7	347.41	43	104	103	....	57	28	19
1886	7,142	4,312	46.3	314.20	49	104	66	....	41	45	11
1887	9,042	4,139	45.3	383.50	41	134	99	6	55	24	16
1888	10,017	4,697	46.7	445.80	29	174	87	6	120	73	9
1889	9,173	4,264	46.7	380.75	..	244	96	..	54	22	10
1890	10,342	4,846	46.8	392.70	49	167	86	....	35	69	11
Total	53,200	24,253	45.5	411.18	243	927	536	12	364	261	76
September											
1885	6,451	3,899	37.0	325.75	35	145	116	5	53	10	12
1886	7,249	4,206	41.3	414.86	42	176	74	...	36	26	19
1887	8,263	4,218	40.0	361.15	48	214	141	10	83	16	11
1888	7,133	3,457	45.9	401.32	31	279	102	12	114	43	11
1889	7,061	3,159	43.4	384.26	19	247	48	2	51	9	14
1890	9,111	4,656	39.0	224.15	30	231	84	....	40	29	15
Totals	47,268	23,115	40.2	351.46	205	1,442	669	29	365	133	82
October											
1885	7,646	4,751	42.6	291.22	27	171	85	5	53	6	15
1886	7,140	3,730	37.0	236.20	32	194	118	2	51	53	17
1887	7,450	2,317	31.1	201.61	38	182	104	4	113	15	13
1888	7,856	2,522	32.0	196.37	33	288	109	12	125	43	19
1889	8,050	2,298	28.4	177.60	21	261	87	....	57	7	13
1890	9,649	2,605	32.7	175.00	26	219	87	....	62	47	6
Total	11,296	14,375	31.9	178.01	177	1,316	590	23	161	171	83
November											
1885	8,448	4,620	39.7	281.85	25	126	69	8	77	17	19
1886	6,572	2,143	35.2	213.33	47	157	98	1	68	185	18
1887	7,202	3,141	30.5	240.03	29	149	80	4	130	30	25
1888	6,987	2,111	30.2	141.88	21	153	61	8	171	52	16
1889	7,084	2,015	28.7	193.60	21	169	63	....	56	25	21
1890	7,009	2,129	28.5	146.01	29	216	68	....	102	74	17
Totals	43,301	16,549	29.8	161.96	172	980	439	21	604	383	116
December											
1885	6,018	3,910	31.4	185.12	32	99	60	7	112	17	28
1886	7,003	2,868	37.3	200.01	50	112	85	5	69	335	42
1887	7,886	2,147	31.6	190.00	66	201	78	12	204	44	35
1888	8,469	2,155	30.8	174.00	38	138	40	13	278	138	53
1889	8,183	2,311	27.0	126.45	48	117	51	....	73	33	22
1890	8,261	2,633	30.0	135.93	50	157	59	....	114	117	36
Totals	45,180	16,116	31.1	165.55	214	727	384	37	980	684	196

BY MONTHS — (*Concluded*).

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
77	284	2,983	464	883	107	612	348	392	1,052	172	375	413	759
114	384	2,696	541	949	56	646	357	449	907	166	373	480	939
48	375	3,669	477	956	90	738	406	429	1,259	227	499	729	1,185
108	411	2,957	588	966	73	784	383	492	930	210	397	454	1,111
112	305	3,092	537	1,012	63	844	449	542	1,029	227	357	502	1,394
133	293	2,916	706	1,073	60	1,024	497	543	1,092	242	553	395	1,718
552	2,052	18,313	3,313	5,839	449	4,648	2,440	2,847	6,269	1,244	2,554	2,983	7,106
123	260	1,719	419	895	54	430	307	347	675	192	267	366	875
134	307	1,484	480	861	58	528	330	309	657	153	266	458	798
57	302	2,158	457	926	67	665	361	442	933	199	354	731	956
144	345	2,465	528	959	74	647	402	473	1,010	227	370	530	1,345
133	327	1,901	591	1,026	63	680	437	540	936	254	373	477	1,196
153	233	2,192	666	1,064	70	871	442	537	1,125	236	512	375	1,749
744	1,774	11,920	3,141	5,731	386	3,821	2,279	2,648	5,336	1,261	2,142	2,937	6,919
98	314	839	475	886	59	412	316	358	651	137	271	398	681
100	322	1,186	497	919	61	588	352	386	674	165	298	474	843
44	359	1,009	597	980	45	522	352	503	722	232	331	765	959
142	308	1,440	649	895	69	600	343	494	895	198	303	510	995
90	343	1,094	646	946	65	638	794	483	870	206	326	446	872
102	247	1,196	710	1,027	47	768	418	520	871	236	375	450	1,712
576	2,093	6,764	3,674	5,656	346	3,528	2,575	2,744	4,683	1,174	1,904	3,043	6,062
61	429	324	525	927	58	342	313	362	603	160	238	341	651
88	618	493	845	985	50	497	366	407	692	193	294	549	825
14	707	297	853	942	53	458	367	475	759	207	309	717	743
102	432	386	1,031	1,034	70	518	392	495	791	232	278	512	984
70	570	339	959	1,016	64	557	431	595	899	238	343	491	1,032
84	382	360	1,001	1,061	71	635	485	597	884	238	366	470	1,538
519	3,138	2,199	5,214	5,965	366	3,007	2,354	2,931	4,628	1,268	1,828	3,080	5,773
53	478	115	716	831	63	302	310	388	619	158	249	353	470
49	675	166	1,056	982	70	328	361	448	576	166	264	494	661
22	844	117	1,041	964	67	370	375	499	709	178	301	718	640
90	538	112	1,051	893	58	414	398	522	796	164	300	443	726
55	501	110	1,136	944	67	450	452	599	822	199	311	419	868
62	467	124	1,207	1,019	74	518	435	554	851	208	387	409	1,388
331	3,503	744	6,204	5,633	399	2,382	2,331	3,010	4,373	1,073	1,812	2,836	4,753
95	572	93	984	875	61	273	330	405	662	192	212	405	552
49	664	107	1,427	1,047	63	338	376	474	781	167	233	537	644
21	883	78	1,205	1,022	75	441	408	543	798	208	295	761	636
113	621	87	1,392	1,017	95	434	461	584	917	232	345	577	817
84	546	110	1,635	1,127	83	463	466	656	950	238	288	455	1,046
71	497	80	1,756	1,045	85	533	483	643	1,000	257	285	454	1,029
433	3,803	555	8,399	6,133	462	2,482	2,524	3,305	5,108	1,294	1,658	3,189	4,724

COMPARATIVE MORTALITY OF THE FOUR SEASONS.

A classification by seasons will best exhibit the comparative healthfulness for different periods of the year, and the table below will show the actual number of deaths during the past three years, season by season, and also the relative proportion of deaths at the susceptible age and from the preventable causes:

1888.	Total number of deaths.	Percentage of deaths under 5 years of age.	Zymotic deaths per 1,000 deaths from all causes.	Deaths from consumption per 1,000 deaths from all causes.
In the winter months	25,267	32.00	117.36	127.55
In the spring months	26,711	31.00	146.97	132.90
In the summer months	28,685	46.83	317.72	97.40
In the fall months	23,306	36.00	221.86	121.12
Average	.....	36.46	220.80	120.00
1889.				
In the winter months	24,889	33.60	173.73	121.53
In the spring months	26,982	34.36	166.33	125.60
In the summer months	28,549	45.16	303.47	103.57
In the fall months	23,600	31.50	187.12	123.26
Average	.....	38.65	207.66	118.49

1890.				
In the winter months	29.435	23.42	108.50	141.13
In the spring months	26,811	31.14	120.78	124.75
In the summer months	29,817	45.60	283.70	100.00
In the fall months	24,460	33.60	176.00	123.45
Average	.....	33.70	173.65	122.00



We find from this table that the actual mortality for each year is uniformly greater in the summer months than in any other season. We also find that for this season there is with little variation a very large percentage of infant mortality, nearly one-half of the deaths occurring during this season under the age of 5 years. In fact, in July more than half the deaths are of young children. During the same period nearly one-third of the mortality is from zymotic diseases. This is not because of the greater prevalence of zymotic diseases generally, but because of the extensive prevalence during this period of diarrhœal diseases. On the other hand, the comparative death rate from consumption is the smallest during this season of either; this is exaggerated in the table by the larger total number of deaths during this season from summer diseases, which makes the relative proportion of deaths from this cause smaller, but it is not entirely on this account that the proportion is diminished, since the actual number of deaths from consumption is smaller in summer than in either other season uniformly.

Autumn is the season which is found to have the smallest actual mortality. The incidence of disease is, however, evidently during this season more upon infantile life and from zymotic causes, since the proportion of their mortality is then next highest to those of the summer season. It is during this season that there is usually an increase in the prevalence of diphtheria and typhoid fever, and the summer prevalence of diarrhœal diseases continues on into September invariably; in fact, the actual mortality from this last cause in September is not as a rule less than that in June. Consumption usually causes fewer deaths in the fall than in other cool months. The winter and spring months are ordinarily freer from zymotic and infant mortality than the other seasons compared with the total mortality. This, however, is not at all uniform. During the three years tabulated, it will be seen that there is great variation in the zymotic mortality. This is due to the extensive prevalence during the winter of 1889 of scarlet fever, and there was also at that time an unusual amount of diphtheria. During these early months of the year the mortality from consumption is ordinarily increased. There is not, however, a very great variation season by season, or month by month, in the actual number of deaths from this cause; it falls a little in the summer and increases in *the winter, but* there is no disease more uniform in its existence

and in the fatality which attends it. A very con-
ence is shown by the tables in the averages for the di-
of infant and zymotic mortality, but from consumption
only a range of difference of three per 1,000 in the y-
averages.

COMPARATIVE MORTALITY OF THE SANITARY DISTRICTS.

The State, because of its size and the very varying conditions affecting sanitary affairs, has been divided into eight sanitary districts and record is kept of the mortality of each of these separately. They are as follows: The *Maritime district*, which includes New York and Brooklyn and their vicinity, with all the counties bordered by the ocean; the *Hudson Valley district*, lying along either side of the Hudson river; the *Mohawk Valley district*, taking in the counties along the Mohawk river, a populous, manufacturing and farming district; the *Adirondack and Northern district*, which takes in all of the State above Mohawk valley and includes much wilderness region; the *Southern Tier district*, in which are all the counties along the southern border of the State, considerable areas of which are sparsely settled; the *East Central district* and the *West Central district*, which together include all the central counties of the State, composed mostly of an agricultural region; and the *Lake Ontario and Western district*, which has within its limits the large city of Buffalo and the counties lying along the great lakes.

The number of towns, villages and cities in the State being far too great to publish separately, month by month, in the bulletin a report of their mortality, a limited number of the cities and larger villages and towns are so specified, and the remainder of the reported mortality for each district is preserved under the head of *Rest of district*. It is evident that the former of these will include a mortality for the most part of an urban character, and will be such as would occur under the conditions incident to a closely aggregated population; the deaths reported under the head of *Rest of district* will be those occurring under strictly rural surroundings. For the sake of contrasting these, tables have been prepared which will show the actual mortality as reported in the monthly bulletin for the last five years, and for the different seasons of the year. In each period of three months, for each district there is placed the total deaths for the season, and also those for the specified localities and for the *Rest of district*, as explained.

DEATHS IN THE SANITARY DISTRICTS FOR FIVE YEARS BY SEASONS,

December, '85, January

WINTER SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Maritime district	13,011	4,908	38.0	48	10	97	148	14	303	18	62	279
Rest of district	190	67	35.2	1	0	1	1	0	5	0	2	4
Specified localities.	12,821	4,841	37.7	47	10	96	147	14	298	18	60	275
December, '86, January												
Maritime district	14,998	6,374	42.4	60	0	108	147	44	195	900	65	96
Rest of district	303	81	26.7	2	0	2	1	0	5	9	0	10
Specified localities.	14,695	6,293	42.1	58	0	106	146	44	190	891	65	86
December, '87, January												
Maritime district	15,865	5,865	36.9	48	1	89	148	40	536	87	79	82
Rest of district	550	106	19.2	1	0	5	3	22	3	0	2	6
Specified localities.	15,315	5,759	37.6	47	1	84	145	18	533	87	77	76
December, '88, January												
Maritime district	15,845	6,447	40.6	46	0	121	93	0	767	394	70	293
Rest of district	492	135	27.0	4	0	3	3	0	8	3	1	5
Specified localities.	15,353	6,312	41.1	42	0	119	90	0	759	391	69	288
December, '89, January												
Maritime district	18,030	4,900	27.1	31	0	127	96	0	175	95	58	169
Rest of district	785	150	19.1	1	0	12	2	0	0	3	2	4
Specified localities.	17,245	4,750	27.4	30	0	115	94	0	175	92	56	165

AND BY SPECIFIED LOCALITIES AND "REST OF DISTRICTS."

and February, '86.

Group and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1,155	179	181.76	2,489	1,946	178	562	749	757	1,273	294	437	792	1,126
4	2	105.26	24	36	1	19	6	5	31	5	9	13	20
1,151	177	178.92	2,465	1,910	177	543	743	752	1,242	289	428	779	1,106

and February, '87.

1,113	197	195.02	3,092	2,115	134	666	854	832	1,363	287	418	845	1,467
7	1	122.11	49	48	0	16	12	24	26	6	19	41	25
1,106	196	195.84	3,043	2,067	134	650	842	808	1,337	281	399	804	1,442

and February, '88.

1,629	174	183.60	3,289	2,116	179	802	958	901	1,568	341	485	995	1,298
33	7	149.09	65	95	3	34	15	29	51	9	14	101	53
1,586	167	184.85	3,224	2,021	176	768	943	872	1,517	332	471	894	1,245

and February, '89.

1,319	199	208.39	2,994	1,990	169	715	1,034	909	1,696	301	496	382	1,854
48	2	156.50	73	75	5	42	43	43	80	17	19	63	55
1,271	197	190.27	2,921	1,915	164	673	991	866	1,616	284	477	319	1,799

and February, '90.

1,016	222	110.31	4,803	2,765	151	785	987	1,023	1,690	384	527	464	2,468
18	6	61.91	174	131	3	37	40	65	124	15	11	86	51
998	216	112.55	4,629	2,634	148	748	947	958	1,566	369	516	378	2,417

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

March, April,

SPRING SEASON.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Maritime district....	13,881	4,991	35.9	72	8	55	178	18	282	50	97	281
Rest of district.....	177	65	36.7	0	0	0	2	1	1	0	0	2
Specified localities.	13,704	4,927	35.9	72	8	55	176	17	281	50	97	279

March, April,

Maritime district....	14,829	5,472	36.9	64	1	60	132	78	237	267	86	65
Rest of district.....	469	125	26.4	0	0	2	4	24	2	17	3	6
Specified localities.	14,360	5,347	36.5	64	1	58	128	54	235	250	83	59

March, April,

Maritime district....	16,105	5,822	36.1	73	5	51	116	110	627	120	97	113
Rest of district.....	668	132	19.7	4	0	0	1	41	9	2	4	5
Specified localities.	15,437	5,690	36.8	69	5	51	115	69	618	118	93	108

March, April,

Maritime district....	16,949	6,934	40.9	57	0	77	90	0	825	286	82	349
Rest of district.....	674	138	20.4	1	0	7	5	0	21	0	3	3
Specified localities.	16,275	6,796	41.7	56	0	70	85	0	804	286	79	346

March, April,

Maritime district...	15,663	5,755	36.7	58	0	61	68	2	158	330	88	134
Rest of district.....	655	99	15.1	8	0	5	1	0	3	5	1	2
Specified localities.	15,008	5,656	37.6	50	0	56	67	2	155	325	87	132

YEARS, BY SEASONS, ETC.—(*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
943	204	157.55	2,444	2,219	171	584	874	771	1,401	304	514	872	1,530
3	3	67.79	31	33	2	13	11	18	22	3	7	13	12
940	201	158.93	2,413	2,186	169	571	863	753	1,379	301	507	859	1,518

May, '87.

1,251	805	205.44	2,583	1,694	178	688	903	808	1,511	314	568	832	1,598
11	6	159.91	69	73	4	26	16	19	53	13	18	65	37
1,240	799	206.89	2,514	1,621	174	662	987	799	1,458	301	550	767	1,561

May, '88.

1,251	275	176.03	2,988	2,237	201	722	983	930	1,765	348	558	667	1,888
21	10	145.22	88	98	7	22	33	33	71	13	17	125	64
1,230	265	177.56	2,900	2,139	194	700	950	897	1,694	335	541	542	1,824

May, '89.

1,330	273	199.77	3,162	2,109	205	774	988	977	1,777	367	534	412	2,285
32	7	117.21	109	109	5	32	44	40	72	18	24	71	71
1,298	266	202.50	3,053	2,000	200	742	944	937	1,705	349	511	341	2,214

May, '90.

974	242	131.26	3,215	2,071	168	853	1,006	1,070	1,727	401	582	351	2,144
8	4	373.73	107	135	7	41	43	76	76	11	16	60	46
966	238	134.59	3,108	1,936	161	812	963	994	1,651	390	566	291	2,098

Deaths in the Sanitary Districts for Five

June, July.

Sanitary districts.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Cholera infantum fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Maritime district	10,713	3,389	48.2	65	1	95	729	1	239	160	29	295
Rest of district	259	108	38.7	1	0	3	4	0	0	0	1	9
Specified localities	11,482	7,380	32.3	66	1	98	125	1	239	160	29	295

June, July.

Maritime district	10,332	3,423	33.1	69	0	145	289	25	173	72	27	78
Rest of district	725	232	30.2	2	0	0	7	0	0	1	0	0
Specified localities	17,208	9,250	53.3	67	0	139	126	25	173	73	27	78

June, July.

Maritime district	19,213	9,963	52.0	62	1	139	139	12	407	167	19	369
Rest of district	423	179	42.4	1	0	1	3	0	0	1	0	7
Specified localities	17,636	9,731	54.2	61	1	137	136	12	407	166	19	362

June, July.

Maritime district	20,213	9,701	47.7	48	0	195	143	0	277	91	31	294
Rest of district	816	296	36.3	1	0	1	5	0	0	4	3	12
Specified localities	19,499	9,405	48.2	45	0	195	137	0	269	77	29	283

June, July.

Maritime district	19,144	10,054	52.5	44	0	151	131	0	117	204	37	270
Rest of district	709	241	30.2	3	0	3	9	0	1	0	1	1
Specified localities	19,345	9,793	50.5	41	0	148	122	0	116	204	36	269

YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
816	3,644	316.81	1,203	1,931	124	1,005	766	678	1,442	282	591	693	1,723
7	47	275.19	19	31	1	13	9	10	39	5	18	21	20
809	3,597	337.95	1,184	1,900	123	992	757	668	1,403	277	573	672	1,703

August, '87.

896	4,602	341.32	1,096	1,849	129	1,266	863	732	1,913	352	741	760	2,070
15	116	228.57	27	85	1	50	25	32	63	13	50	87	134
881	4,486	351.90	1,069	1,764	128	1,216	838	700	1,950	339	691	673	1,936

August, '88.

860	4,385	355.06	1,343	1,793	140	1,285	825	812	1,830	330	654	305	2,505
4	106	274.46	18	41	0	23	17	27	38	14	14	36	66
856	4,279	356.39	1,325	1,752	140	1,262	808	785	1,792	316	640	269	2,439

August, '89.

742	4,249	296.18	1,383	1,917	129	1,429	904	829	1,751	352	592	367	2,744
10	177	256.12	55	69	3	59	33	50	96	16	37	86	83
732	4,072	297.29	1,328	1,848	126	1,370	871	779	1,655	336	555	281	2,661

August, '90.

675	4,278	310.59	1,638	1,923	134	1,626	995	846	1,876	390	852	346	2,561
17	149	230.57	34	102	2	51	52	62	106	19	36	62	88
658	4,129	314.12	1,604	1,821	132	1,575	943	784	1,770	371	816	284	2,473

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

September, October,

FALL SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Maritime district	13,772	5,998	43.5	59	4	236	215	3	98	261	26	154
Rest of district.....	205	43	20.9	0	0	3	4	0	1	2	2	2
Specified localities.	13,567	5,955	43.9	59	4	233	211	3	97	259	24	152

September, October,

Maritime district ...	14,054	5,427	38.6	46	0	230	222	18	224	40	32	53
Rest of district.....	535	109	20.3	1	0	28	6	3	8	0	0	0
Specified localities.	13,519	5,318	39.3	45	0	202	216	15	216	40	32	53

September, October,

Maritime district	12,899	5,787	44.8	35	0	280	161	2	319	125	25	278
Rest of district.....	385	117	30.3	3	0	5	4	0	3	1	0	6
Specified localities.	12,514	5,670	45.3	32	0	275	157	2	316	124	25	272

September, October,

Maritime district ...	13,797	4,977	36.0	19	0	271	150	0	77	33	36	139
Rest of district.....	595	145	24.3	2	0	23	6	0	2	0	0	7
Specified localities.	13,202	4,832	36.5	17	0	248	144	0	75	33	36	132

September, October,

Maritime district	14,658	5,831	39.7	35	0	278	138	0	143	119	24	195
Rest of district.....	562	85	15.5	3	0	23	5	0	3	0	0	5
Specified localities.	14,096	5,746	40.7	32	0	255	133	0	140	119	24	190

YEARS, BY SEASONS, ETC.— (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1,126	1,216	246.73	1,785	1,890	101	826	815	678	1,149	303	548	695	1,584
11	9	112.17	17	36	2	11	13	14	20	5	9	22	22
1,115	1,207	235.34	1,768	1,854	99	815	802	664	1,129	298	539	673	1,562

November, '87.

1,309	915	212.67	1,928	1,915	101	796	838	810	1,274	338	544	871	1,550
25	19	170.09	47	76	2	36	27	28	65	14	13	84	73
1,284	896	221.76	1,881	1,839	99	760	811	782	1,209	324	531	787	1,477

November, '88.

788	1,052	237.61	1,935	1,846	120	878	790	821	1,489	329	432	366	1,838
24	39	220.77	32	39	3	25	20	24	52	13	10	51	31
764	1,013	238.13	1,903	1,807	117	853	770	797	1,437	316	422	315	1,807

November, '89.

798	842	171.41	1,879	1,907	109	903	1,273	867	1,425	326	547	348	1,838
11	28	132.77	53	87	7	51	31	43	86	17	15	46	79
787	814	173.15	1,826	1,820	102	852	1,242	824	1,339	309	532	302	1,759

November, '90.

669	968	168.44	2,070	1,977	131	1,101	917	862	1,415	358	631	333	2,304
19	21	140.56	41	87	4	49	43	47	78	16	28	42	49
650	947	176.64	2,029	1,890	127	1,052	874	815	1,337	242	603	291	2,255

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

WINTER SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial disease.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
December, '85, January												
Hudson Valley district	2,196	582	24.2	21	33	55	23	3	16	22	15	36
Rest of district	493	79	16.0	3	0	5	4	1	5	2	5	2
Specified localities	1,703	453	26.5	18	33	50	9	2	11	20	10	8
December, '86, January												
Hudson Valley district	2,215	576	26.0	46	0	67	16	3	16	1	10	29
Rest of district	522	100	19.1	3	0	13	2	0	7	0	7	4
Specified localities	1,693	476	28.1	43	0	54	14	3	9	1	3	25
December '87, January												
Hudson Valley district	2,783	750	26.9	23	0	65	24	2	83	9	9	11
Rest of district	780	129	16.5	5	0	16	10	0	17	4	0	2
Specified localities	2,023	621	30.6	18	0	50	14	2	66	5	9	9
December, '88, January												
Hudson Valley district	2,626	670	25.5	14	0	58	8	1	110	19	3	18
Rest of district	773	134	18.5	3	0	12	1	0	28	13	1	3
Specified localities	1,853	536	25.7	11	0	46	7	1	82	6	2	15
December, '89, January												
Hudson Valley district	3,146	667	21 2	21	0	59	20	0	31	0	9	31
Rest of district	863	134	15.5	2	0	12	11	0	9	0	4	
Specified localities	2,283	533	23.9	19	0	47	9	0	22	0	5	

YEARS, BY SEASONS, ETC. — (*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
196	17	182.68	282	329	28	124	87	214	266	69	81	155	157
35	0	125.76	55	71	8	30	24	48	72	12	27	57	28
161	17	199.17	227	258	20	94	63	166	194	57	54	98	129
and February, 87.													
120	23	145.37	320	344	33	130	66	208	267	47	63	246	169
20	3	111.11	52	68	2	28	17	35	67	12	18	129	35
100	20	155.34	268	276	31	102	49	173	200	35	45	117	134
and February, '88.													
238	19	174.63	361	355	26	160	113	264	285	67	87	402	179
55	5	150.00	68	80	6	40	30	50	71	29	30	207	35
183	14	182.89	293	275	20	120	83	214	214	38	57	195	144
and February, '89.													
174	19	161.46	399	317	24	136	109	272	272	64	91	304	204
28	5	121.60	98	77	8	31	43	71	76	25	35	153	62
146	14	178.08	301	240	16	105	66	201	196	39	56	151	142
and February '90.													
175	16	121.42	766	405	21	192	121	311	354	88	76	259	171
32	4	90.38	208	111	9	56	35	65	104	27	22	111	47
143	12	133.15	458	294	12	136	86	246	250	61	54	148	124

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

March, April,

SPRING SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Hudson Valley district	2,559	744	29.0	38	0	46	15	0	26	26	9	33
Rest of district	583	119	20.4	1	0	8	5	0	12	2	2	5
Specified localities.	1,976	625	31.1	37	0	38	10	0	14	24	7	28

March, April,

Hudson Valley district	2,366	546	23.2	32	0	55	13	0	21	21	9	7
Rest of district	614	112	18.2	2	0	10	4	0	4	6	0	4
Specified localities.	1,752	434	24.8	30	0	45	9	0	17	15	9	3

March, April,

Hudson Valley district.	2,730	620	22.7	31	0	141	12	3	58	9	6	10
Rest of district	854	129	15.1	3	0	8	3	1	15	2	1	6
Specified localities.	1,876	491	26.1	28	0	133	9	2	43	7	5	4

March, April,

Hudson Valley district	2,938	758	25.8	20	0	47	21	0	131	73	9	14
Rest of district	854	147	17.2	0	0	10	10	0	33	6	0	3
Specified localities.	2,084	611	29.3	20	0	37	11	0	98	67	9	11

March, April,

Hudson Valley district.	2,721	620	22.7	16	0	46	22	1	14	1	10	47
Rest of district	870	109	11.3	4	0	12	6	0	6	1	3	6
Specified localities.	1,851	511	27.6	12	0	34	16	1	8	0	7	41

YEARS, BY SEASONS, ETC.— (*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
144	40	147.32	451	401	30	185	98	229	232	55	105	193	203
35	4	126.93	77	95	3	43	20	39	70	10	36	75	41
109	36	133.09	374	306	27	142	78	190	162	45	69	118	162

May, '87.

67	13	100.59	299	386	30	148	86	248	251	57	88	301	224
10	3	70.03	64	85	7	37	14	40	66	17	34	156	50
57	10	111.24	235	301	23	111	72	208	185	40	54	145	174

May, '88.

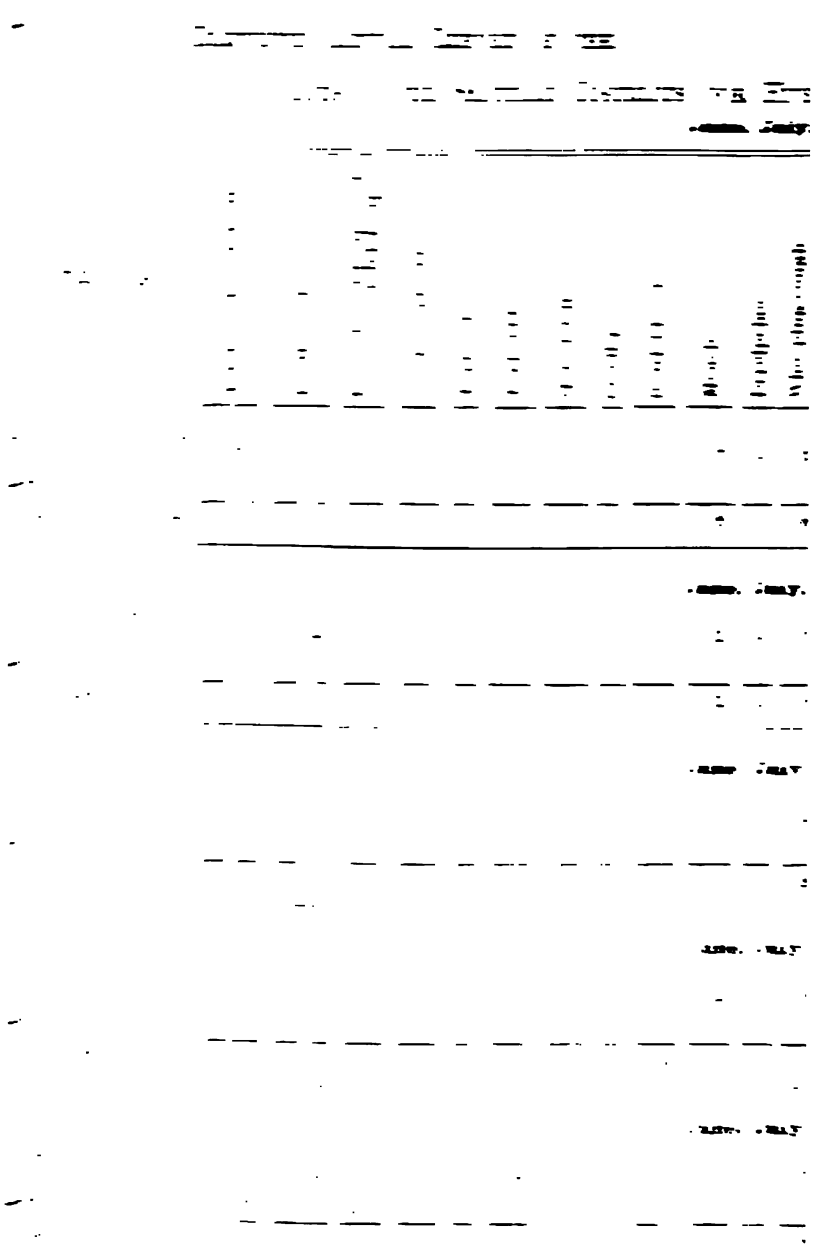
123	25	153.11	436	358	24	168	83	246	259	58	106	468	206
32	1	84.30	101	94	8	46	18	45	87	16	37	266	64
91	24	184.41	335	264	16	122	65	201	172	42	69	202	142

May, '89.

127	20	157.24	491	388	25	162	128	281	277	77	87	349	221
36	3	118.14	143	113	8	44	30	64	86	17	24	163	51
91	17	173.22	248	275	17	118	98	217	181	60	63	186	170

May, '90.

76	24	94.45	514	348	27	184	143	281	353	72	87	229	216
19	3	68.96	171	91	7	61	111	103	116	20	25	112	23
57	21	106.42	343	257	20	123	32	178	237	52	62	117	193



YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Disease of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
110	419	289.05	174	274	24	214	93	205	276	64	129	172	215
25	69	218.86	31	52	3	47	24	45	55	21	38	74	49
85	340	308.64	143	222	21	167	69	160	221	43	91	98	166

August, '87.

85	564	291.69	132	294	29	211	91	237	247	65	145	296	232
17	113	237.82	21	65	6	53	18	29	83	20	35	148	55
68	451	310.11	111	229	23	158	73	208	164	45	110	148	177

August, '88.

158	513	299.61	168	287	17	178	99	204	305	79	110	239	286
35	105	232.43	35	76	6	35	34	40	94	32	29	137	83
123	408	324.14	133	211	11	143	65	164	211	47	81	102	203

August, '89.

165	538	303.93	144	301	21	220	109	238	297	76	146	267	276
33	86	230.55	22	76	4	55	21	48	67	35	43	113	80
132	452	343.31	122	225	17	165	88	190	230	41	103	154	196

August, '90.

55	469	242.34	180	192	18	241	135	218	375	58	151	153	236
13	109	227.88	47	73	7	78	48	73	105	16	47	74	47
42	360	247.06	133	119	11	163	87	145	270	42	104	79	188

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

September, October

FALL SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Hudson Valley district	2,212	706	31.9	34	0	95	23	0	20	2	4	38
Rest of district	477	120	25.1	0	0	22	7	0	7	0	2	5
Specified localities.	1,735	586	33.7	34	0	73	16	0	13	2	2	33

September, October

Hudson Valley district	2,391	672	28.1	25	0	92	22	0	42	4	3	9
Rest of district	605	113	18.6	0	0	27	8	0	7	0	1	2
Specified localities.	1,786	559	31.2	25	0	65	14	0	35	4	2	7

September, October,

Hudson Valley district	2,449	758	20.9	17	0	82	28	1	41	6	7	28
Rest of district	656	147	22.4	3	0	28	8	0	7	4	4	6
Specified localities.	1,793	611	34.0	14	0	54	20	1	34	2	3	22

September, October,

Hudson Valley district	2,597	661	25.4	10	0	96	33	0	43	1	3	16
Rest of district	669	106	15.8	0	0	16	15	0	5	0	0	0
Specified localities.	1,928	555	28.7	10	0	80	18	0	38	1	3	16

September, October,

Hudson Valley district	2,324	549	23.6	17	0	61	28	0	9	0	4	23
Rest of district	779	129	16.5	6	0	18	10	0	0	0	1	10
Specified localities.	1,545	420	20.7	11	0	43	18	0	9	0	3	13

YEARS, BY SEASONS, ETC.— (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
163	129	229.61	234	304	19	167	89	180	197	51	77	175	211
21	30	210.29	37	59	4	32	16	32	58	16	26	74	29
142	99	238.61	197	245	15	135	73	148	139	35	51	101	182

November, '87.

262	113	239.65	201	294	14	145	76	241	199	54	104	288	183
39	30	188.33	38	64	2	49	27	43	58	17	24	132	37
223	83	256.43	163	230	12	96	49	198	141	37	80	156	146

November, '88.

203	178	241.32	208	267	16	159	109	200	259	58	105	240	237
26	61	224.08	40	82	3	40	26	36	82	16	26	111	54
177	117	247.62	168	185	13	119	83	164	177	42	79	129	183

November, '89.

261	109	212.55	260	325	12	202	118	243	268	72	106	238	191
24	33	139.04	47	97	2	55	25	66	84	15	28	112	45
237	76	238.07	213	228	10	147	83	177	184	57	78	126	146

November, '90.

82	121	148.45	220	309	11	191	118	199	322	63	109	209	213
27	39	142.49	47	88	5	64	43	68	111	26	41	111	64
55	82	151.45	173	221	6	127	75	131	211	37	68	98	149

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

December, '85, January

WINTER SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Adirondack and Northern district..	607	113	18.6	5	1	12	1	0	4	1	2	4
Rest of district.....	328	56	17.0	1	0	7	1	0	3	0	2	3
Specified localities.	279	57	20.4	4	1	5	0	0	1	1	0	1

December, '86, January

Adirondack and Northern district..	637	145	25.9	19	0	4	1	0	5	2	6	5
Rest of district.....	358	80	22.3	3	0	2	0	0	1	0	2	5
Specified localities.	279	65	23.2	7	0	2	1	0	4	2	4	0

December, '87, January

Adirondack and Northern district..	759	148	19.7	15	0	9	0	0	18	0	2	1
Rest of district.....	421	58	13.7	7	0	7	0	0	4	0	0	1
Specified localities.	338	90	26.6	8	0	2	0	0	14	0	2	0

December, 88, January

Adirondack and Northern district..	819	186	22.7	3	0	11	1	0	6	4	0	2
Rest of district.....	481	91	18.7	1	0	6	0	0	5	2	0	2
Specified localities.	338	95	28.1	2	0	5	1	0	1	2	0	0

December, '89, January

Adirondack and Northern district..	1,030	221	21.4	4	0	14	0	0	1	1	4	20
Rest of district.....	587	104	17.7	2	0	5	0	0	1	1	2	5
Specified localities.	443	117	26.4	2	0	9	0	0	0	0	2	15

YEARS, BY SEASONS, ETC.—(*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
51	8	146.62	57	79	17	45	25	53	61	22	16	75	68
24	2	131.09	33	51	10	27	10	23	31	7	11	45	37
27	6	164.87	24	28	7	18	15	30	30	15	5	30	31
and February, '87.													
24	2	94.19	85	87	8	32	21	44	66	21	30	116	67
11	2	72.62	51	48	3	21	10	25	32	12	20	76	34
13	0	121.83	34	39	5	11	11	19	34	9	10	40	33
and February, '88.													
50	4	130.43	93	102	8	40	19	49	76	15	18	195	45
34	3	133.01	49	50	7	22	11	28	38	7	4	129	22
16	1	127.21	44	52	1	18	8	21	38	8	14	66	23
and February, '89.													
36	6	84.24	141	100	11	52	22	49	99	27	28	149	72
15	3	70.68	97	54	5	28	13	27	48	16	19	100	0
21	3	103.55	44	46	6	24	9	22	51	11	9	49	32
and February, '90.													
43	6	90.29	271	124	11	68	40	79	86	30	30	131	67
29	3	81.77	177	77	8	53	29	49	52	19	19	81	35
14	3	101.58	94	47	3	15	11	30	34	11	11	50	32



YEARS, BY SEASONS, ETC.—(*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
21	7	124.79	78	88	14	52	21	40	76	28	28	69	60
3	1	119.53	43	52	9	28	10	19	36	12	20	37	36
18	6	131.03	35	36	5	24	11	21	40	16	8	32	24

May, '87.

19	8	92.82	85	104	9	37	19	44	67	39	19	160	62
12	1	74.62	43	57	5	17	11	20	31	17	11	121	39
7	7	116.50	42	47	4	20	8	24	36	22	8	39	23

May, '88.

47	6	108.37	140	94	14	64	24	65	73	21	28	272	100
29	4	98.47	79	54	9	39	15	41	39	10	15	174	56
18	2	122.06	61	40	5	25	9	24	34	11	13	98	44

May, '89.

15	6	71.07	104	117	10	60	26	58	90	25	31	149	88
8	1	61.18	58	66	5	44	17	30	57	12	20	89	46
7	5	84.76	46	51	5	16	9	28	33	13	11	60	42

May, '90.

36	6	107.07	170	108	11	80	28	80	112	35	28	123	109
24	3	116.08	107	69	7	40	19	52	70	21	14	78	46
12	3	93.02	63	39	4	40	9	28	42	14	14	45	63



YEARS, BY SEASONS, ETC. — (*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
28	74	242.08	26	76	10	47	31	51	62	26	25	80	54
15	21	187.89	13	36	3	29	16	26	27	15	11	52	24
13	53	264.11	13	40	7	18	15	25	35	11	14	28	30

August, '87.

17	126	239.55	31	94	9	53	22	49	63	26	36	172	64
7	41	176.05	16	49	5	29	15	27	32	15	22	109	32
10	85	309.27	15	45	4	24	7	22	31	11	14	63	32

August, '88.

36	110	223.44	39	83	17	52	18	53	88	33	28	144	81
11	40	178.84	13	46	9	39	7	30	34	16	14	84	34
25	70	265.40	26	37	8	13	11	23	54	17	14	60	47

August, '89.

17	116	234.56	36	91	7	59	23	56	81	26	33	86	60
13	61	227.79	24	47	6	40	15	33	45	16	19	58	36
4	55	248.27	12	44	1	19	8	23	36	10	14	28	24

August, '90.

29	86	178.79	57	91	10	63	34	63	90	20	40	79	96
13	31	137.07	36	54	7	41	24	33	53	11	28	49	49
16	55	230.76	21	37	3	22	10	30	37	9	12	30	47

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]											
[illegible]	41	10	5..			1					1
[illegible]	38	4	5..			1					
[illegible]	30	7	9..						-		-
[illegible]											
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[illegible]	43	4	7..			3					.
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[illegible]	44	.	1								
[illegible]	37	.	3			.					
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YEARS, BY SEASONS, ETC.— (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
20	56	202.99	41	92	9	40	13	54	55	19	23	93	40
6	28	173.13	19	47	6	28	6	27	31	8	14	68	23
14	28	240.60	22	45	3	12	7	27	24	11	9	25	17

November, '87.

60	52	225.51	48	85	8	47	18	42	62	25	26	144	74
41	39	276.84	21	41	4	30	10	20	31	13	14	91	28
19	13	170.86	27	44	4	17	8	22	31	12	12	53	46

November, '88.

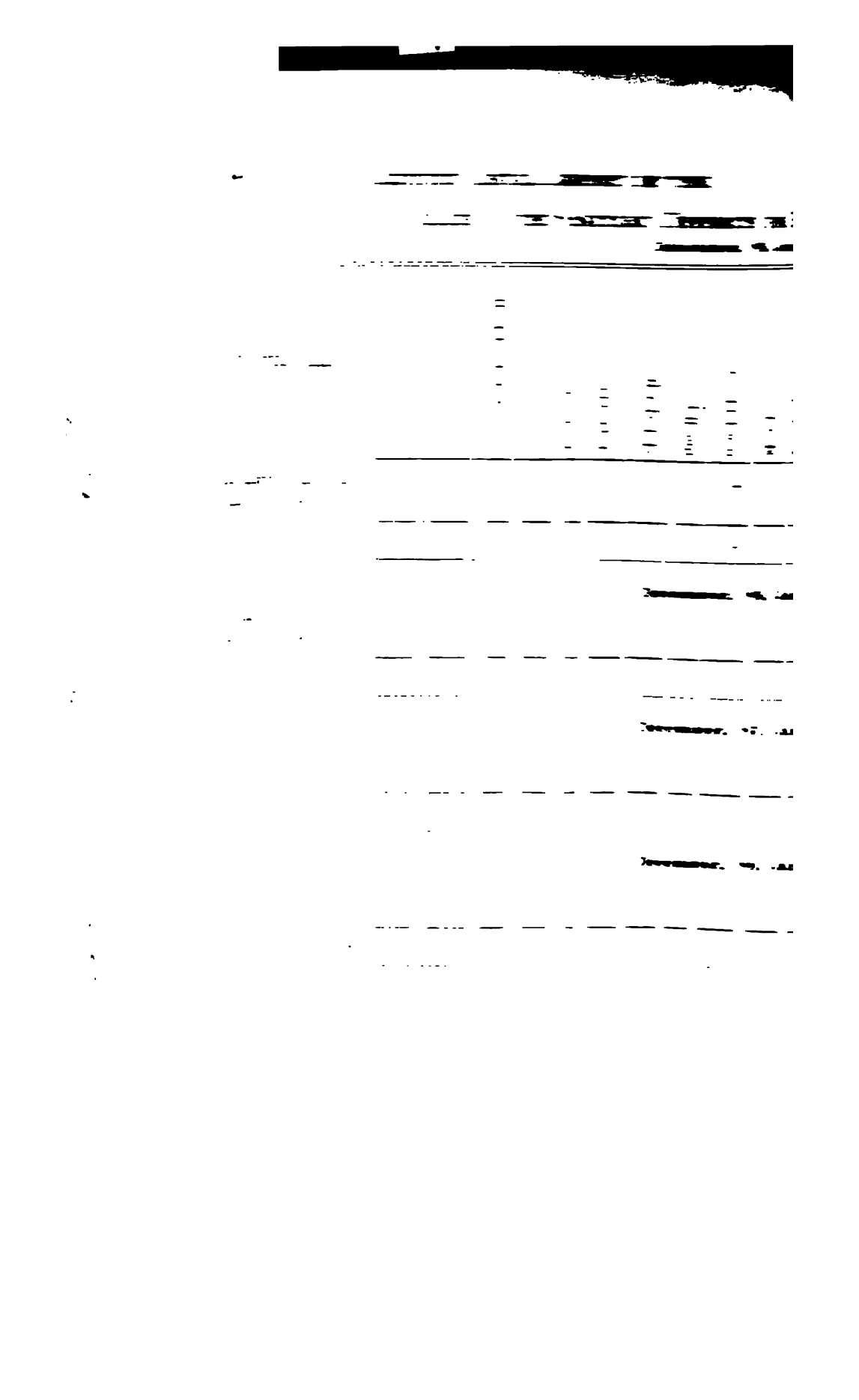
30	88	238.96	64	79	8	53	21	56	81	22	20	127	59
16	40	203.97	41	38	6	29	15	26	39	12	8	69	37
14	48	276.13	25	41	2	24	6	30	42	10	12	58	22

November, '89.

36	63	190.29	68	79	4	53	35	60	98	28	23	113	73
12	45	179.01	40	50	2	31	20	36	63	15	15	79	37
24	18	208.75	28	29	2	22	15	24	35	13	8	34	36

November, '90.

36	69	179.65	48	89	6	84	32	70	67	24	36	108	89
27	36	158.69	34	62	3	55	23	47	41	20	21	79	56
9	30	208.79	14	27	3	29	9	23	26	4	15	29	33



YEARS, BY SEASONS, ETC.— (*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
38	6	146.57	99	101	3	36	33	74	98	22	27	70	60
7	0	75.80	24	21	0	11	12	15	29	7	7	27	30
31	6	172.93	75	80	3	25	21	59	69	15	20	43	30
and February, '87.													
28	11	101.92	125	132	10	49	47	72	103	26	29	128	72
4	1	72.51	41	30	2	15	17	21	20	9	7	60	21
24	10	112.72	84	102	8	34	30	51	83	17	22	68	51
and February, '88.													
133	7	153.16	127	127	13	64	38	77	107	35	45	245	73
18	4	74.69	45	48	2	25	13	20	28	9	16	157	23
115	3	199.15	82	79	11	39	25	57	79	26	29	88	50
and February, '89.													
66	5	114.00	139	122	3	62	28	79	115	41	45	160	115
12	1	78.75	52	37	1	33	12	26	40	16	20	104	44
54	4	137.98	87	85	2	29	16	53	75	25	25	56	71
and February, '90.													
102	15	127.43	326	188	11	79	53	86	175	33	36	151	78
15	3	54.36	125	57	5	38	21	39	55	15	12	85	35
87	12	165.90	201	131	6	41	32	47	120	18	24	66	43

DEATHS IN THE SANITARY DISTRICTS [illegible]

[illegible]

SPRING MARCH.	Total number of deaths.	Deaths under 5 years.	Per cent. age of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.
Mohawk Valley district	697	195	28 5	17	0	23	7	0	23	0
Rest of district	232	42	17 6	0	0	7	1	0	6	0
Specified localities.	929	253	25 9	17	0	15	6	0	6	0

[illegible]

March,										
Mohawk Valley district	1,087	222	20.9	17	0	13	1	0	14	20
Rest of district	285	68	16 3	3	0	4	1	0	11	2
Specified localities.	802	150	22.3	14	0	9	0	0	3	8

March,										
Mohawk Valley district	1,209	236	19.5	8	0	24	7	0	5	8
Rest of district	498	65	13 1	5	0	9	6	0	0	6
Specified localities.	715	168	23.4	3	0	15	1	0	5	2

March,										
Mohawk Valley district	1,176	242	20 5	7	0	16	2	0	10	14
Rest of district	417	53	12.7	2	0	7	1	0	1	4
Specified localities.	759	169	22.2	5	0	9	1	0	9	10

March,										
Mohawk Valley district	1,257	287	22.8	12	0	15	3	0	15	5
Rest of district	486	71	14.6	3	0	4	0	0	1	3
Specified localities.	771	216	26.5	9	0	11	3	0	14	2

YEARS, BY SEASONS, ETC. — (*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
31	9	125.75	110	107	10	56	35	63	121	32	24	96	67
2	1	84.03	23	35	3	16	6	17	30	6	11	51	20
29	8	142.61	87	72	7	40	29	46	91	26	13	45	47

May, '87.

19	4	81.53	117	130	12	80	40	94	119	44	41	198	105
2	1	67.50	39	53	3	28	15	28	27	13	9	107	37
17	3	86.51	78	77	9	52	25	66	92	31	32	91	68

May, '88.

76	7	116.72	166	165	13	54	37	93	117	41	34	241	106
16	0	89.24	52	75	3	22	10	29	34	16	14	154	40
60	7	135.66	114	90	10	32	27	64	83	25	20	87	66

May, '89.

39	12	92.60	165	149	15	72	42	109	139	42	52	188	94
6	1	57.31	61	42	2	32	13	38	29	15	21	112	28
33	11	111.98	104	107	13	40	29	71	110	27	31	76	66

May, '90.

68	18	114.55	188	152	10	101	49	113	188	32	47	109	114
27	1	86.41	81	50	5	45	24	44	53	16	23	69	35
41	17	135.01	107	102	5	56	25	69	135	16	24	40	79

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

June, July,

SUMMER SEASON.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Mohawk Valley district	1,014	341	33.6	13	0	14	5	0	5	0	3	6
Rest of district	286	74	25.8	0	0	4	0	0	2	0	1	2
Specified localities.	728	267	36.6	13	0	10	5	0	3	0	2	4

June, July,

Mohawk Valley district	1,244	421	33.8	5	0	24	3	0	7	9	1	3
Rest of district	431	101	23.4	1	0	6	1	0	7	1	1	1
Specified localities.	813	320	39.3	4	0	18	2	0	0	8	0	2

June, July,

Mohawk Valley district	1,105	350	31.6	6	0	14	6	0	4	3	0	7
Rest of district	413	91	22.0	3	0	6	1	0	0	1	0	2
Specified localities.	692	259	37.4	3	0	8	5	0	4	2	0	5

June, July,

Mohawk Valley district	1,213	397	32.7	14	0	23	4	0	6	7	6	10
Rest of district	414	88	21.2	5	0	12	1	0	3	1	3	2
Specified localities.	799	309	38.6	9	0	11	3	0	3	6	3	8

June, July,

Mohawk Valley district	1,347	381	28.2	10	0	49	14	0	7	10	3	7
Rest of district	467	77	16.4	3	0	13	3	0	1	4	3	3
Specified localities.	880	304	34.5	7	0	36	11	0	6	6	0	4

YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
28	122	193.29	82	130	3	88	35	74	114	36	43	119	94
2	25	125.87	19	34	2	19	9	19	22	9	22	58	37
26	97	219.78	63	96	1	69	26	55	92	27	21	61	57

August, '87.

57	260	296.62	42	118	8	75	37	77	150	46	53	171	98
9	74	234.34	11	43	4	35	15	25	34	15	19	93	36
48	186	329.64	31	75	4	40	22	52	116	31	34	78	62

August, '88.

60	167	241.62	74	130	12	77	47	76	132	53	79	150	108
16	40	167.07	18	38	3	39	16	27	48	20	27	75	33
44	127	284.68	56	92	9	38	31	49	94	33	52	75	75

August, '89.

25	211	253.91	62	144	2	73	50	79	129	60	45	152	111
7	43	185.99	21	39	1	37	19	32	37	23	10	87	31
18	168	286.60	41	105	1	36	31	47	92	37	35	65	80

August, '90.

46	209	263.54	76	115	11	108	61	108	182	48	71	107	105
12	46	188.43	24	38	3	48	22	45	64	27	30	57	21
34	163	303.40	52	77	8	60	39	63	118	21	41	50	84

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

September, October,

FALL SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Mohawk Valley district	954	218	21.8	7	0	28	6	0	9	0	2	7
Rest of district	290	56	19.3	3	0	11	0	0	1	0	0	3
Specified localities.	664	162	24.3	4	0	17	6	0	8	0	2	4

September, October,

Mohawk Valley district	1,083	217	20.0	2	0	42	10	0	4	1	2	1
Rest of district	410	67	16.3	0	0	14	5	0	1	1	0	0
Specified localities.	673	150	22.2	2	0	28	5	0	3	0	2	1

September, October,

Mohawk Valley district	1,086	293	26.9	3	0	47	5	0	1	0	4	5
Rest of district	394	96	24.3	1	0	18	1	0	0	0	4	2
Specified localities.	692	197	28.4	2	0	29	4	0	1	0	0	3

September, October,

Mohawk Valley district	1,127	279	24.7	2	0	36	9	0	6	1	0	8
Rest of district	464	85	18.3	1	0	15	4	0	1	0	0	2
Specified localities.	663	184	27.7	1	0	21	5	0	5	1	0	6

September, October,

Mohawk Valley district	1,125	255	22.6	3	0	71	11	0	8	2	1	6
Rest of district	401	79	19.7	2	0	19	1	0	1	0	1	2
Specified localities.	724	176	24.3	1	0	52	10	0	7	2	0	4

YEARS, BY SEASONS, ETC.— (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
36	58	160.37	69	120	8	98	41	58	95	35	50	148	79
7	19	151.72	15	30	4	28	14	12	17	9	17	75	25
28	39	149.09	54	90	4	70	27	46	78	26	33	73	54

November, '87.

142	46	230.84	74	114	7	68	38	78	99	44	41	188	82
33	23	187.80	19	34	2	29	15	29	29	19	20	111	26
109	23	255.57	55	80	5	39	23	49	70	25	21	77	56

November, '88.

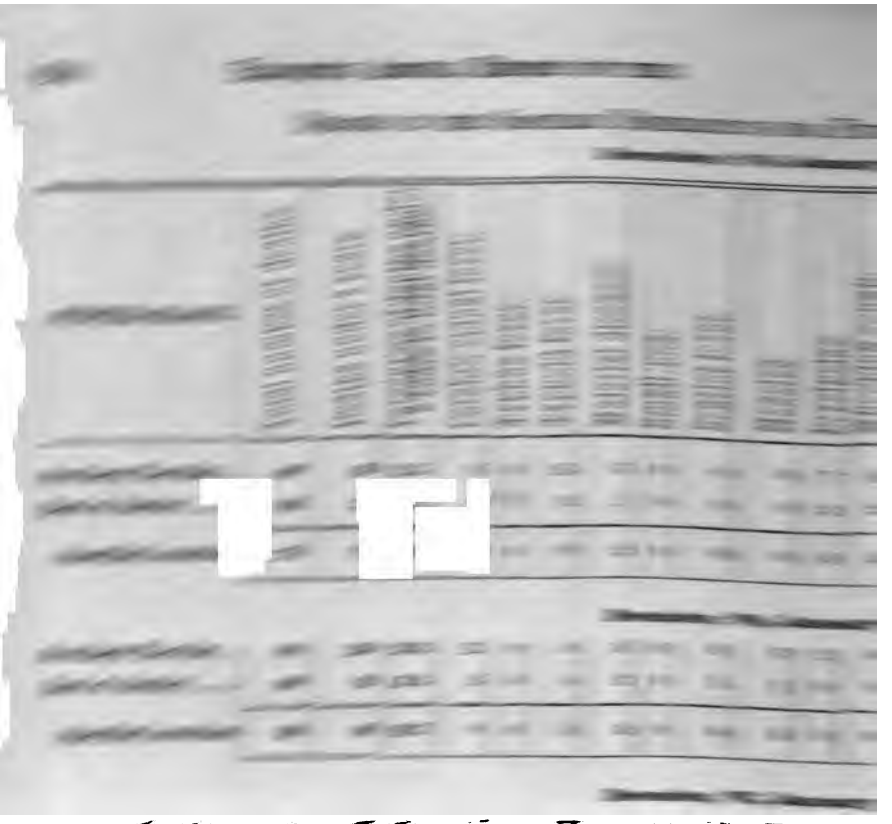
64	104	214.54	103	104	6	69	48	76	116	31	53	159	88
12	48	218.27	29	34	1	24	25	32	28	10	15	83	27
52	56	212.42	74	70	5	45	23	44	88	21	38	76	61

November, '89.

111	73	218.27	111	106	14	91	65	101	151	40	54	141	107
12	34	148.70	31	34	7	42	19	42	48	19	23	91	39
99	39	266.96	80	72	7	49	46	59	103	21	31	50	68

November, '90.

71	51	199.20	87	121	9	98	55	95	142	35	52	120	87
10	22	169.57	32	36	5	44	18	33	40	17	26	67	24
61	29	215.46	55	85	4	54	37	62	102	18	26	53	63



YEARS, BY SEASONS, ETC.—(*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
11	8	112.12	62	51	8	31	21	29	68	18	26	36	38
2	2	86.41	17	19	5	13	10	11	30	7	5	18	13
9	6	127.30	45	32	3	18	11	18	38	11	21	18	25
and February, '87.													
37	3	145.70	67	46	8	29	10	25	56	13	26	97	51
11	0	96.15	30	21	2	13	8	11	24	5	5	57	8
26	3	180.88	47	25	6	16	2	14	32	8	21	40	43
and February, '88.													
50	6	137.43	92	60	7	55	20	64	73	25	31	138	50
12	0	96.98	36	22	4	19	7	23	38	10	7	91	13
38	6	166.66	56	38	3	36	13	41	35	15	24	47	37
and February, '89.													
13	5	90.40	122	53	11	53	21	72	74	23	29	126	71
8	0	86.20	49	25	6	26	6	43	39	13	9	78	24
5	5	94.33	73	28	5	27	15	29	35	10	20	47	47
and February, '90.													
64	7	138.50	195	91	9	56	44	72	116	40	37	121	89
26	1	88.88	92	43	7	35	26	45	59	24	20	83	59
38	6	203.38	103	48	2	21	18	27	57	16	17	38	30

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

March, April,

SPRING SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'age of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Southern Tier district	462	90	19.0	2	0	3	2	0	4	1	2	2
Rest of district	156	23	14.7	2	0	2	0	0	2	0	1	0
Specified localities	286	47	16.4	1	0	1	2	0	1	1	1	2

March, April,

Southern Tier district	608	131	21.5	2	0	6	10	0	11	2	4	1
Rest of district	221	30	13.5	0	0	1	3	0	5	0	0	1
Specified localities	387	101	26.4	2	0	5	7	0	5	2	4	0

March, April,

Southern Tier district	913	183	20.0	10	0	10	7	0	18	25	1	4
Rest of district	426	64	15.0	1	0	5	2	0	10	8	1	3
Specified localities	487	119	24.4	9	0	5	5	0	8	25	0	1

March, April,

Southern Tier district	891	161	17.0	4	0	14	1	0	8	6	5	4
Rest of district	462	70	15.1	4	0	5	0	0	6	5	2	4
Specified localities	428	91	21.2	0	0	9	1	0	2	1	3	0

March, April,

Southern Tier district	1,011	191	18.8	10	0	11	2	0	12	13	1	17
Rest of district	499	66	13.2	7	0	3	0	0	4	5	1	3
Specified localities	512	125	24.4	3	0	8	2	0	8	7	0	14

YEARS, BY SEASONS, ETC.— (*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
7	4	70.13	63	53	6	31	13	35	70	15	29	54	43
0	1	70.51	16	19	0	13	3	11	26	8	11	24	14
7	3	69.93	47	34	6	18	10	24	44	7	18	30	29

May, '87.

20	8	106.13	76	57	4	28	16	53	86	21	26	101	71
7	4	99.54	27	17	1	11	9	11	36	9	6	60	12
13	4	109.94	49	40	3	17	7	42	50	12	20	41	59

May, '88.

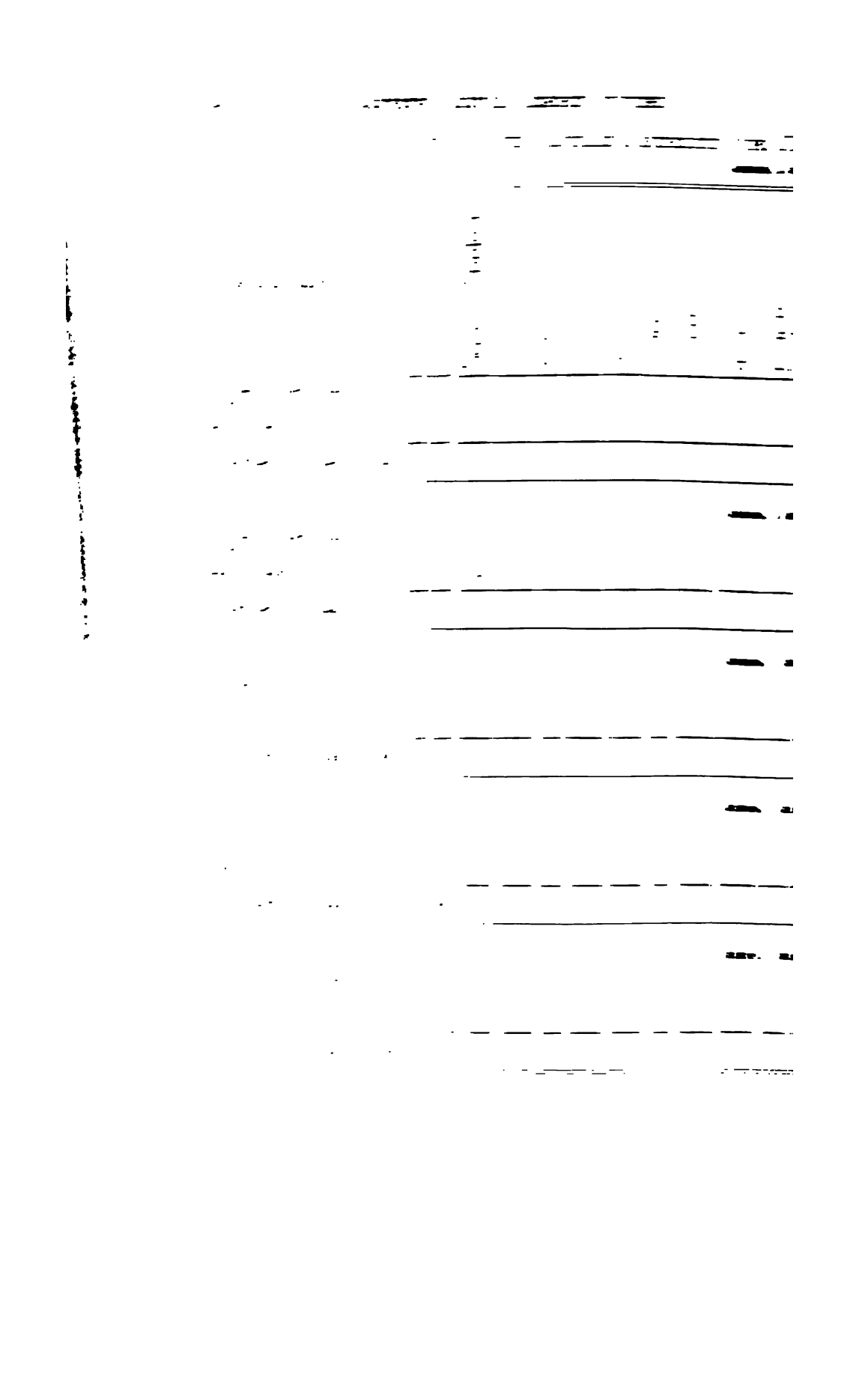
39	3	122.67	131	95	11	47	37	65	87	24	33	180	80
16	2	112.65	55	37	6	28	17	25	39	14	15	122	20
23	1	154.00	76	58	5	19	20	40	48	10	18	58	60

May, '89.

14	13	78.56	136	112	7	63	35	83	117	36	39	112	82
9	6	88.33	71	61	3	32	14	35	51	20	23	80	32
5	7	65.42	65	51	4	31	21	48	66	16	16	32	50

May, '90.

40	6	110.78	192	95	18	73	26	83	116	32	63	133	70
18	2	88.17	95	31	6	38	15	43	62	13	23	91	38
22	4	132.82	97	64	12	35	11	40	54	19	40	42	32



YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
17	70	243.09	25	36	7	44	16	38	53	29	20	48	57
5	12	195.48	6	11	2	10	4	6	24	6	3	27	8
12	58	248.58	19	25	5	34	12	32	29	23	17	21	49

August, '87.

20	130	219.83	31	52	11	53	11	37	74	16	39	91	52
4	29	208.33	10	19	1	15	6	11	33	9	13	60	13
16	101	224.38	21	33	10	38	5	26	41	7	26	31	39

August, '88.

10	101	208.70	49	75	6	71	31	49	98	34	55	100	69
7	26	187.09	18	27	3	29	13	21	32	15	13	55	26
3	75	222.22	31	48	3	42	18	28	66	19	42	45	43

August, 89,

7	113	214.89	28	70	8	59	30	66	98	39	38	107	100
4	31	186.27	10	35	4	30	18	35	41	19	23	77	47
3	82	231.96	18	35	4	29	12	31	57	20	15	30	53

August, 90.

15	142	213.71	61	70	9	90	28	81	109	36	73	82	78
3	36	143.97	29	24	5	39	17	48	54	21	35	47	18
12	106	283.08	32	46	4	51	11	33	55	15	38	35	60

	Total n	Deaths	Percent 5 year	
Southern Tier district	507	118	23.2	
Rest of district	195	31	15.8	
Specified localities	312	87	27.8	

Southern Tier district	665	109	14.8	
Rest of district	302	38	12.5	
Specified localities	363	71	19.5	

Southern Tier district	828	181	21.8	
Rest of district	404	61	15.0	
Specified localities	424	120	28.3	

Southern Tier district	892	170	19.0	8
Rest of district	470	64	13.6	1
Specified localities	422	106	25.1	4

YEARS, BY SEASONS, ETC.—(*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
32	29	224.85	35	54	18	42	12	54	50	20	12	60	49
11	8	169.23	11	22	0	16	6	19	21	8	6	34	9
21	21	259.61	24	32	18	26	6	35	29	12	6	26	40

November, '87.

32	37	195.48	47	72	6	52	16	39	61	24	43	120	56
8	22	185.43	17	28	1	19	6	18	39	9	23	75	21
24	15	203.85	30	49	5	33	10	26	22	15	20	45	35

November, '88.

23	65	201.69	106	95	5	57	30	52	72	25	48	104	67
15	31	195.54	53	42	3	23	16	22	36	11	22	75	22
8	34	207.57	53	53	2	34	14	30	36	14	26	29	45

November, '89.

55	65	234.30	60	73	10	78	28	64	110	33	44	100	73
25	36	206.38	34	38	3	42	19	35	60	19	23	62	38
30	29	265.40	26	35	7	36	9	29	50	14	21	38	35

November, '90.

35	52	183.69	78	83	6	67	43	76	112	31	56	112	87
8	27	150.35	32	31	3	31	24	40	53	10	29	70	33
27	25	211.57	46	52	3	36	19	36	59	21	27	42	54

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

December, '95, January

WINTER SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
East Central district	925	114	18.2	0	0	11	2	0	4	1	4	0
Rest of district	278	35	11.8	0	0	4	0	0	1	1	2	0
Specified localities	349	79	22.6	0	0	7	2	0	3	0	2	0

December, '96, January

East Central district	816	160	19.6	1	0	12	5	0	3	1	7	3
Rest of district	290	64	22.8	1	0	6	2	0	6	0	4	1
Specified localities	426	106	24.9	0	0	6	0	0	3	1	3	2

December, '97, January

East Central district	1,026	209	20.3	4	3	22	5	0	16	22	3	4
Rest of district	471	46	9.7	3	0	5	3	0	0	1	2	4
Specified localities	333	102	29.1	1	0	7	3	0	6	20	3	0

December, '98, January

East Central district	981	168	17.1	4	0	25	6	28	7	7	6	3
Rest of district	331	38	11.5	2	0	10	1	20	2	4	2	1
Specified localities	479	110	22.9	2	0	23	3	8	5	3	2	2

December, '99, January

East Central district	1,260	198	15.9	2	0	14	6	0	3	1	1	3
Rest of district	782	79	12.1	1	0	20	0	0	0	0	0	2
Specified localities	382	99	26.1	1	0	4	6	0	3	1	1	1

YEARS, BY SEASONS, ETC.—(*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
26	6	86.40	81	91	4	33	18	42	76	20	19	81	86
15	0	86.96	36	37	3	20	12	16	39	11	8	49	27
11	6	88.88	45	54	1	13	6	26	37	9	11	32	59
and February, '87.													
27	7	93.12	113	98	12	50	36	67	104	33	35	156	86
7	1	71.79	53	45	3	24	21	24	37	12	12	110	21
20	6	112.65	60	53	9	26	15	43	67	21	23	46	15
and February, '88.													
71	10	148.14	119	113	17	52	30	86	90	23	36	239	59
25	1	112.52	36	41	6	20	14	32	28	6	15	177	43
46	9	178.37	83	72	11	32	16	54	62	17	21	62	16
and February, '89.													
45	13	131.49	120	107	16	45	44	106	124	37	33	165	54
25	1	115.53	50	39	3	29	27	53	61	19	15	112	33
20	12	150.31	70	68	13	16	17	53	63	18	18	53	21
and February, '90.													
55	10	77.99	316	159	23	72	53	107	121	40	46	185	72
18	1	54.07	169	75	8	40	30	53	69	21	23	133	43
37	9	96.12	147	84	15	32	23	54	52	19	23	52	29

[illegible]

[illegible]

[illegible]	Total number of deaths	Deaths under 5 years	Per cent of deaths of ... to total deaths	Cerebro-spinal fever	Typhus fever	Typhoid fever	Malarial diseases	Small-pox	Scarlet fever	Measles	Diphtheria	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]				[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]	
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			[illegible]	[illegible]	[illegible]	
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						[illegible]		
[illegible]	[illegible]	[illegible]								[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]						[illegible]	[illegible]		

YEARS, BY SEASONS, ETC.—(*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
17	3	61.96	149	98	13	53	33	72	113	34	27	114	66
6	1	61.49	58	36	6	26	18	32	44	16	15	71	30
11	2	62.36	91	62	7	27	15	40	69	18	12	43	36

May, '87.

13	8	70.23	100	123	13	42	32	68	88	26	35	190	64
3	2	50.96	46	45	7	26	17	23	37	11	12	131	36
10	6	88.78	54	78	6	16	15	45	51	15	23	59	28

May, '88.

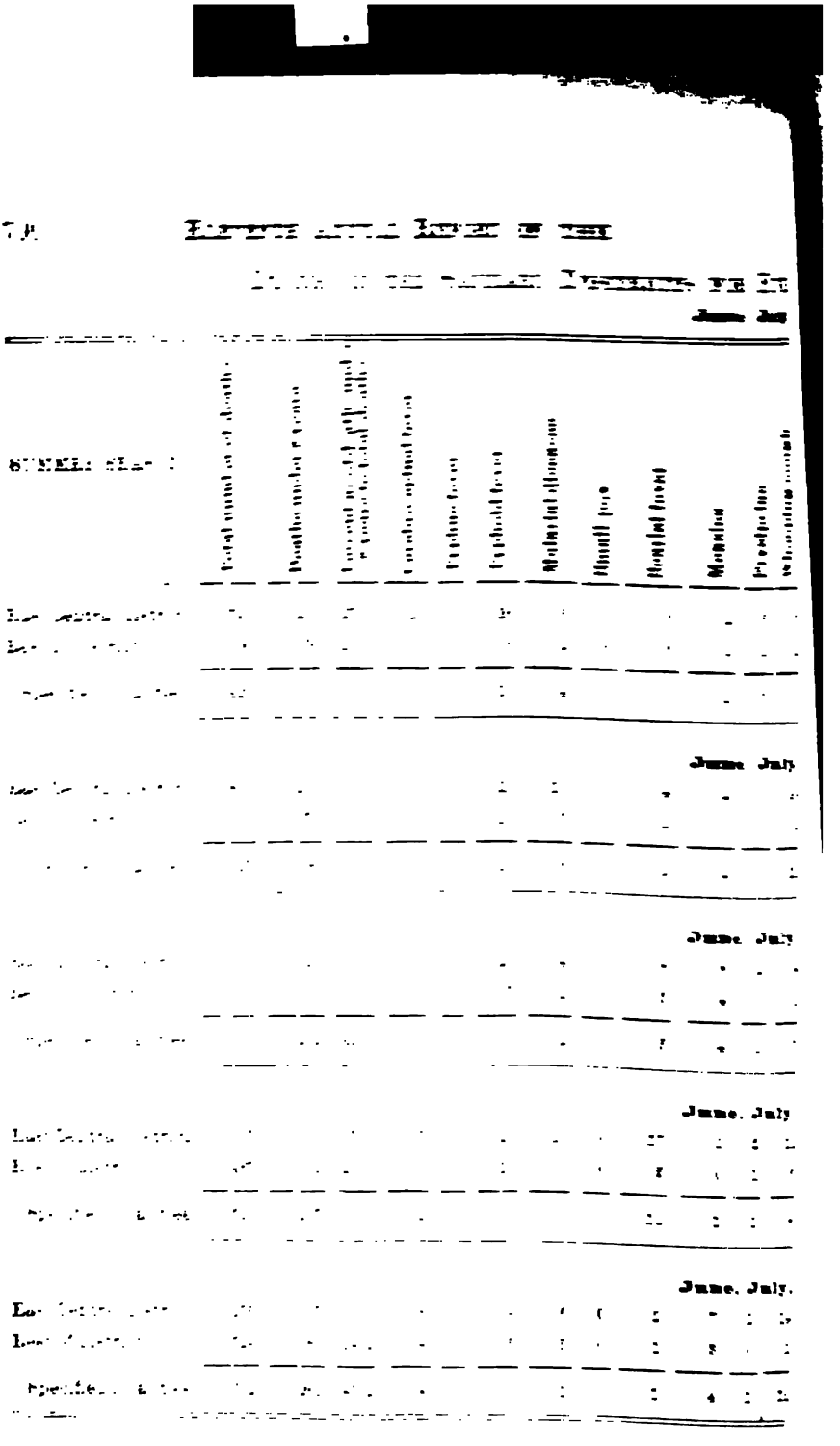
56	13	119.46	165	145	23	46	32	89	128	34	44	231	58
26	2	109.02	50	56	7	24	11	35	50	11	24	172	34
30	11	128.76	115	89	16	22	21	54	78	23	20	59	24

May, '89.

18	9	87.88	166	130	14	69	47	93	122	39	37	202	67
9	3	91.07	86	52	5	33	30	43	41	22	10	133	44
9	6	84.58	80	78	9	36	17	50	81	17	27	69	23

May, '90.

40	5	85.45	240	152	7	97	49	145	130	35	50	143	172
19	2	69.36	114	68	5	58	29	82	74	20	22	103	67
21	3	102.48	126	84	2	39	20	63	56	15	28	40	105



YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
23	81	204.10	38	81	13	69	22	67	85	26	41	78	61
8	14	123.34	15	26	7	28	9	34	42	8	19	52	30
15	67	263.06	23	55	6	41	13	33	43	18	22	26	31

August, '87.

13	146	224.62	31	103	7	36	31	50	100	26	52	161	70
3	39	171.34	12	34	1	15	9	20	30	15	19	111	28
10	107	294.11	19	69	6	21	22	30	70	11	33	50	42

August, '88.

24	295	347.29	45	104	14	69	34	71	121	54	52	154	83
16	41	166.66	18	29	3	37	16	33	43	30	32	100	37
8	254	478.85	27	75	11	32	18	38	78	24	20	54	46

August, '89.

23	228	289.97	47	113	21	69	50	81	126	45	41	139	56
5	63	197.12	22	37	7	33	30	37	47	26	17	97	38
18	165	346.77	25	76	14	36	20	44	79	19	24	42	18

August, '90.

14	183	215.39	67	112	10	92	46	94	129	50	71	124	112
5	52	146.56	34	49	4	55	24	50	52	25	37	79	38
9	131	272.15	33	63	6	37	22	44	77	25	34	45	74

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

September, October,

FALL SEASON.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
East Central district.	733	141	19.2	1	0	37	4	0	0	0	6	4
Rest of district.....	325	45	13.8	0	0	14	2	0	0	0	5	2
Specified localities.	408	96	23.4	1	0	23	2	0	0	0	1	2

September, October,

East Central district.	852	145	17.0	2	0	35	14	0	4	1	3	2
Rest of district.....	311	31	9.9	1	0	18	4	0	2	0	0	1
Specified localities.	541	114	21.0	1	0	17	10	0	2	1	3	1

September, October,

East Central district.	1,008	197	19.6	2	0	67	13	0	9	1	2	4
Rest of district.....	521	82	15.7	2	0	31	4	0	2	1	3	2
Specified localities.	484	115	23.7	0	0	36	9	0	7	0	0	2

September, October,

East Central district.	1,103	228	20.6	6	0	53	13	0	9	6	2	3
Rest of district.....	525	87	14.6	5	0	30	3	0	0	0	3	0
Specified localities.	578	141	24.3	1	0	23	10	0	9	6	2	3

September, October,

East Central district.	1,107	209	18.8	2	0	52	9	0	7	1	1	3
Rest of district.....	581	76	13.0	2	0	28	5	0	1	0	0	4
Specified localities.	526	133	25.2	0	0	24	4	0	6	1	1	5

YEARS, BY SEASONS, ETC.— (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
55	59	226.49	42	109	14	52	24	64	55	29	42	105	31
20	19	190.76	18	45	2	22	10	28	21	13	7	73	16
35	40	254.90	24	64	12	30	14	36	34	16	35	32	15

November, '87.

33	34	137.32	74	92	12	56	27	82	81	30	38	191	41
4	8	122.18	23	36	1	19	9	26	32	9	5	95	18
29	26	166.35	51	56	11	37	18	56	49	21	33	96	23

November, '88.

47	88	231.84	72	107	13	74	35	76	103	33	51	155	53
25	40	209.21	33	43	5	42	20	41	50	19	24	105	30
22	48	258.26	39	64	8	32	15	35	53	14	27	50	23

November, '89.

55	98	216.68	93	121	16	80	39	105	124	37	42	148	62
20	40	186.66	23	57	5	47	25	55	46	12	18	91	38
35	58	243.79	70	64	11	33	14	50	78	25	24	57	24

November, '90.

20	86	168.92	97	102	8	80	47	105	114	48	62	133	122
9	42	156.62	51	51	7	50	19	68	64	32	28	90	30
11	44	182.50	46	51	1	30	28	37	50	16	34	43	92

[illegible]	Total number of deaths	Deaths under 5 years	[illegible]	[illegible] typhoid fever	Typhus fever	[illegible] fever	Malarial diseases	Small-pox	Scarlet fever	Measles	Diphtheria	Whooping cough
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]						[illegible]	[illegible]		
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[illegible]	[illegible]	[illegible]	[illegible]							[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]	[illegible]

YEARS, BY SEASONS, ETC. — (*Continued*).

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
and February, '86.													
9	7	71.25	60	67	2	30	24	40	78	12	18	50	49
8	3	80.50	27	29	1	14	12	23	34	10	7	35	26
1	4	61.67	33	38	1	16	12	17	44	2	11	15	23
and February, 87.													
14	7	77.47	51	67	4	25	23	45	71	22	20	105	42
2	3	53.25	19	36	2	12	11	26	26	13	6	65	17
12	4	100.37	32	31	2	13	12	19	45	9	14	40	25
and February, '88.													
40	1	96.15	72	70	6	40	26	56	73	27	24	206	48
17	0	65.90	40	46	3	26	19	33	41	14	16	151	32
23	1	142.36	32	24	3	14	7	23	32	13	8	55	16
and February, '89.													
10	0	55.31	95	65	3	38	44	74	91	19	27	151	42
5	0	46.22	55	32	3	24	32	41	51	10	16	104	23
5	0	68.84	40	33	0	14	12	33	40	9	11	47	19
and February '90.													
29	3	81.16	196	112	5	60	50	82	125	31	22	134	66
9	1	51.19	117	61	3	40	30	55	72	19	13	104	36
20	2	128.00	79	51	2	20	20	27	53	12	9	30	31



[illegible]

YEARS, BY SEASONS, ETC.—(*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
4	7	63.21	56	95	11	36	25	51	96	26	23	95	46
0	1	24.91	21	53	5	13	7	23	47	20	11	53	21
4	6	97.79	35	42	6	23	18	28	49	6	12	42	25

May, '87.

18	9	80.18	87	83	9	40	20	42	62	20	17	180	48
7	2	51.91	51	45	7	19	11	26	30	13	8	119	30
11	7	115.25	36	38	2	21	9	16	32	7	9	61	18

May, '88.

17	2	83.22	87	105	9	51	21	51	86	15	23	227	62
14	1	78.42	49	73	5	30	6	34	42	9	14	159	36
3	1	90.90	38	32	4	21	15	17	44	6	9	68	26

May, '89.

13	7	75.27	101	89	8	60	34	60	80	20	40	146	50
4	4	53.86	61	49	7	33	23	37	37	11	18	100	28
9	3	104.10	40	40	1	27	11	23	43	9	22	46	22

May, '90.

23	1	131.48	146	88	9	64	48	93	107	42	37	136	63
8	1	78.99	78	47	7	43	26	62	65	22	25	98	39
15	0	203.98	68	41	2	21	22	31	42	20	12	38	24

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

March, April,

SPRING SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
West Central district.	598	83	13.8	6	0	9	5	0	2	1	2	2
Rest of district.....	281	27	9.6	1	0	0	1	0	1	1	0	2
Specified localities.	317	56	17.6	5	0	9	4	0	1	0	2	0
												March, April,
West Central district.	661	114	17.2	1	0	3	8	0	0	3	7	4
Rest of district.....	366	49	13.3	0	0	2	3	0	0	1	4	0
Specified localities.	295	65	22.0	1	0	1	5	0	0	2	3	4
												March, April,
West Central district.	793	95	11.9	12	0	8	1	1	13	8	2	2
Rest of district.....	496	44	8.8	4	0	3	1	1	6	7	1	1
Specified localities.	297	51	17.1	8	0	5	0	0	7	1	1	1
												March, April,
West Central district.	744	102	13.7	6	0	6	7	2	9	3	2	1
Rest of district.....	427	43	10.0	4	0	4	2	0	1	2	1	1
Specified localities.	317	59	18.6	2	0	2	5	2	8	1	1	0
												March, April,
West Central district.	959	151	15.7	6	0	19	8	0	8	44	6	11
Rest of district.....	557	50	8.9	1	0	11	4	0	4	8	3	4
Specified localities.	402	101	25.1	5	0	8	4	0	4	36	3	7

YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
7	53	171.61	19	59	3	28	25	34	67	19	23	68	46
1	21	132.42	9	29	1	12	9	15	30	12	10	43	20
6	32	205.53	10	30	2	16	16	19	37	7	13	25	26

August, '87.

12	95	203.12	20	67	8	40	31	35	68	23	31	138	44
6	38	145.63	8	30	3	23	19	13	22	14	19	86	17
6	57	226.58	12	37	5	17	12	22	46	9	12	52	27

August, '88.

3	49	109.64	25	75	6	47	35	47	100	20	37	149	70
2	17	83.79	3	41	4	29	17	20	55	12	21	95	31
1	32	138.03	22	34	2	18	18	27	45	8	16	54	39

August, '89.

25	72	160.54	33	92	4	52	32	39	99	33	40	132	61
7	38	134.88	18	50	1	30	16	24	55	20	28	91	39
18	34	196.39	15	42	3	22	16	15	44	13	12	41	22

August, '90.

7	79	220.97	48	104	3	61	49	76	96	35	50	107	55
5	36	127.56	17	51	1	34	32	46	60	20	27	73	23
2	43	168.50	31	53	2	27	17	30	36	15	23	24	32

YEARS BY SEASONS, ETC — (*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
20	44	203.66	32	70	6	25	18	28	53	10	27	80	42
5	15	210.52	10	29	3	15	6	11	24	5	13	43	15
15	29	230.49	22	41	3	10	12	17	29	5	14	37	27
November, '87.													
26	36	168.03	34	61	3	38	18	39	57	26	26	148	55
14	19	150.72	19	29	2	23	8	12	35	16	14	102	32
12	17	187.02	15	32	1	15	11	27	22	10	12	46	23
November, '88.													
15	60	170.69	48	74	8	48	20	55	63	29	31	149	58
5	40	177.94	17	34	3	22	7	26	39	24	17	101	38
10	20	164.47	31	40	5	26	13	29	24	5	14	48	20
November, '89.													
25	57	177.33	39	76	4	52	31	78	91	31	46	106	63
15	42	183.71	20	36	0	31	22	46	64	20	33	78	41
10	15	166.05	19	40	4	21	9	32	27	11	13	28	22
November, '90.													
10	80	135.40	68	75	3	85	43	95	114	34	36	144	61
4	58	158.69	41	42	1	38	31	64	67	25	19	94	28
6	22	101.64	27	33	2	47	12	31	47	9	17	50	33

DEATHS IN THE SANITARY DISTRICTS FOR FIV

December, '85, January

WINTER SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Lake Ontario and Western district ...	1,047	199	19.0	7	0	11	6	0*	18	1	10	1
Rest of district.....	293	46	15.6	3	0	3	1	0	3	1	3	1
Specified localities.	754	153	20.2	4	0	8	5	0	15	0	7	1

December, '86, January

Lake Ontario and Western district ...	1,372	446	32.5	11	0	27	15	0	14	6	6	4
Rest of district.....	355	81	22.8	2	0	8	4	0	2	0	2	1
Specified localities.	1,017	365	35.8	9	0	19	11	0	12	6	4	3

December, '87, January

Lake Ontario and Western district ...	2,268	689	30.8	8	0	38	9	0	32	18	7	9
Rest of district.....	508	85	16.7	6	0	9	1	0	5	3	0	0
Specified localities.	1,760	604	34.3	8	0	29	8	0	33	15	7	9

December, '88, January

Lake Ontario and Western district ...	2,382	678	29.6	12	0	31	12	16	35	5	9	11
Rest of district.....	497	85	17.1	2	0	10	1	1	8	0	3	2
Specified localities.	1,785	593	33.2	10	0	21	11	15	27	5	8	14

December, '89, January

Lake Ontario and Western district ...	2,382	553	21.4	23	0	43	17	0	18	20	5	20
Rest of district.....	633	67	10.5	2	0	8	4	0	4	4	1	4
Specified localities.	1,949	486	24.9	21	0	35	13	0	14	16	4	16

YEARS, BY SEASONS, ETC.—(*Continued*).

and February, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory disease.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
69	5	124.16	138	154	14	68	47	91	141	34	42	92	96
11	2	95.56	37	35	4	27	17	23	34	10	18	37	22
58	3	135.27	101	119	10	41	30	68	107	24	24	55	74

and February, '87.

135	17	172.01	174	170	12	66	41	77	193	45	40	181	137
8	5	90.14	53	36	4	20	10	24	23	14	12	100	27
127	12	200.58	121	134	8	46	31	53	170	31	28	81	110

and February, '88.

218	10	156.52	269	270	29	146	40	152	310	71	80	265	271
25	3	90.55	43	44	3	36	11	32	49	26	16	161	41
193	7	175.56	226	226	26	110	29	120	261	45	64	104	230

and February, '89.

83	16	102.54	302	271	35	155	89	174	304	87	131	155	299
18	2	92.57	59	52	7	38	18	48	54	27	16	93	41
65	14	106.44	243	219	28	117	71	126	250	60	115	62	258

and February, '90.

87	11	94.50	555	307	21	168	86	178	316	80	111	178	338
11	3	67.93	142	55	2	55	21	50	69	24	18	112	42
76	8	103.12	413	252	19	113	65	128	247	56	93	66	296

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

March, April,

SPRING SEASON.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Cholera infantum.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Lake Ontario and Western District.	1,206	392	29.4	31	0	36	14	0	22	1	13	11
Rest of District.....	227	46	20.3	1	0	2	5	0	7	0	1	0
Specified localities.	1,434	438	31.0	32	0	34	11	0	15	1	11	11

March, April,

Lake Ontario and Western District	1,348	403	29.4	19	0	17	14	0	34	42	11	9
Rest of District	434	90	20.7	1	0	4	4	0	0	6	4	0
Specified localities.	1,914	774	31.5	17	0	13	12	0	34	36	7	9

March, April,

[illegible]	1,361	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

March, April,

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

March, April,

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

YEARS, BY SEASONS, ETC.— (*Continued*).

May, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
97	14	110.27	272	278	14	106	67	139	286	58	66	163	326
10	0	83.08	44	49	6	26	16	23	41	10	11	61	22
87	14	122.43	228	229	8	80	51	116	245	48	55	102	304

May, '87.

109	23	124.55	295	285	19	117	71	135	359	74	107	260	246
12	6	87.55	44	40	4	25	10	23	47	22	14	129	38
97	17	133.34	251	245	15	92	61	112	312	52	93	131	208

May, '88.

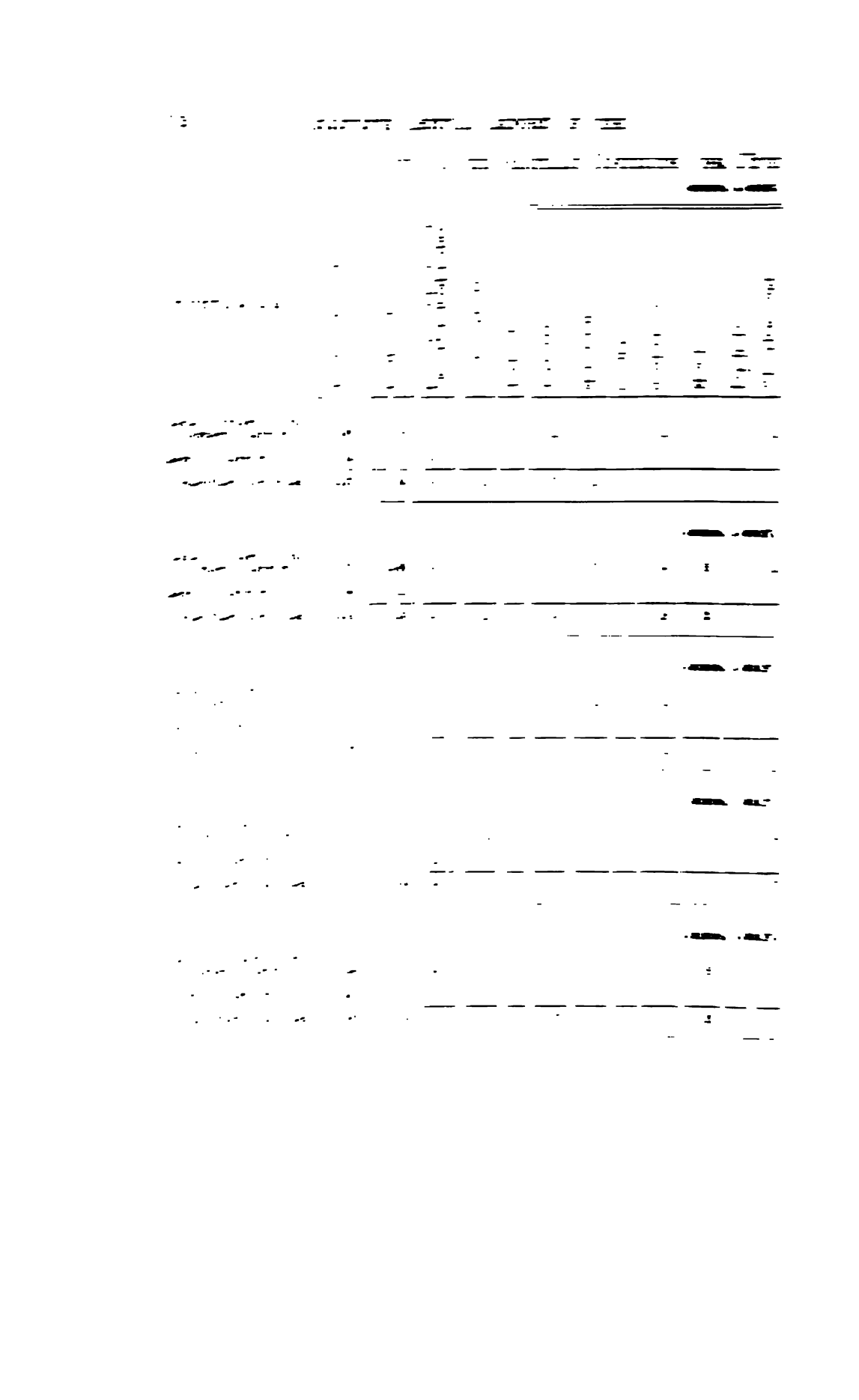
134	20	120.21	389	321	30	154	90	176	430	60	98	280	314
17	1	94.07	65	63	1	32	12	25	57	17	24	183	41
117	19	127.39	324	258	29	122	78	151	373	43	74	93	273

May, '89.

115	20	113.11	343	295	46	148	97	174	339	71	105	213	295
13	3	82.28	76	71	10	46	18	46	36	70	25	115	54
102	17	122.53	267	224	36	102	79	128	303	1	80	98	241

May, '90.

96	26	100.14	585	331	19	197	114	216	363	79	121	192	346
9	1	80.72	119	67	4	40	27	67	78	17	17	103	39
87	25	105.45	466	264	15	157	87	149	285	62	104	89	307



YEARS, BY SEASONS, ETC.—(*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
57	317	233.32	100	218	9	104	46	128	269	55	107	144	252
6	35	166.35	7	29	5	18	6	35	38	20	19	42	40
51	282	270.41	93	189	4	86	40	93	231	35	88	102	212

August, '87.

52	792	346.66	138	253	12	195	85	114	361	60	118	268	324
5	83	222.44	18	48	4	33	20	16	45	21	19	124	37
47	709	368.39	120	205	8	162	65	98	316	39	99	144	287

August, '88.

95	713	325.62	151	246	29	168	91	144	341	71	163	165	384
16	71	254.40	17	51	10	29	19	27	42	20	29	102	46
79	642	345.49	134	195	19	139	72	117	299	51	134	63	338

August, '89.

51	578	244.26	139	231	11	202	74	179	335	72	171	143	343
4	55	174.73	13	51	3	44	19	51	47	20	29	71	34
47	523	263.88	126	180	8	158	55	128	288	52	142	72	309

August, '90.

39	589	261.03	217	276	18	393	88	135	361	78	209	119	384
6	45	132.59	36	65	2	53	22	44	79	17	50	57	46
33	544	290.05	181	211	16	340	66	91	282	61	159	62	338

DEATHS IN THE SANITARY DISTRICTS

SANITARY DISTRICTS	Total number of deaths.	Deaths under 5 years	Proportion per cent. of deaths under 5 years to total deaths	Convulsions, epileptic forms	Diphtheria forms	Typhoid forms	Malarial diseases	Mumps	Mental forms
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

YEARS, BY SEASONS, ETC. — (*Continued*).

August, '86.

Croup and Diphtheria.	Diarrhœal diseases.	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
57	317	233.32	100	218	9	104	46	128	269	55	107	144	252
6	35	166.35	7	29	5	18	6	35	38	20	19	42	40
51	282	270.41	93	189	4	86	40	93	231	35	88	102	212

August, '87.

52	792	346.66	138	253	12	195	85	114	361	60	118	268	324
5	83	222.44	18	48	4	33	20	16	45	21	19	124	37
47	709	368.39	120	205	8	162	65	98	316	39	99	144	287

August, '88.

95	713	325.62	151	246	29	168	91	144	341	71	163	165	384
16	71	254.40	17	51	10	29	19	27	42	20	29	102	46
79	642	345.49	134	195	19	139	72	117	299	51	134	63	338

August, '89.

51	578	244.26	139	231	11	202	74	179	335	72	171	143	343
4	55	174.73	13	51	3	44	19	51	47	20	29	71	34
47	523	263.88	126	180	8	158	55	128	288	52	142	72	309

August, '90.

39	589	261.03	217	276	18	393	88	135	361	78	209	119	384
6	45	132.59	36	65	2	53	22	44	79	17	50	57	46
33	544	290.05	181	211	16	340	66	91	282	61	159	62	338

DEATHS IN THE SANITARY DISTRICTS FOR FIVE

September, October,

FALL SEASON.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.
Lake Ontario and Western district...	2,211	886	40.0	11	0	65	24	0	19	0	8	13
Rest of district	348	94	27.0	1	0	16	3	0	1	0	2	1
Specified localities.	1,863	792	42.5	10	0	49	21	0	18	0	6	12
												September, October,
Lake Ontario and Western district...	2,511	860	34.2	18	0	82	26	0	40	14	2	10
Rest of district	539	98	18.1	3	0	16	10	0	10	3	1	1
Specified localities.	1,972	762	38.6	15	0	66	16	0	30	11	1	9
												September, October,
Lake Ontario and Western district...	2,561	959	37.4	15	0	134	33	29	32	1	3	10
Rest of district	553	118	21.3	3	0	33	3	1	4	1	1	2
Specified localities.	2,008	841	41.8	12	0	101	30	28	28	0	2	8
												September, October,
Lake Ontario and Western district...	2,450	862	35.1	16	0	104	19	2	16	5	4	27
Rest of district	550	100	18.1	4	0	28	7	0	3	1	1	3
Specified localities.	1,900	762	40.1	12	0	76	12	2	13	4	3	24
												September, October,
Lake Ontario and Western district...	2,643	852	32.2	20	0	118	29	0	18	14	5	4
Rest of district	640	99	15.4	1	0	26	10	0	9	5	0	1
Specified localities.	2,003	753	37.5	19	0	92	19	0	9	9	5	3

YEARS, BY SEASONS, ETC.—(*Continued*).

November, '86.

Croup and Diphtheria.	Diarrhœal diseases	Zymotic deaths per 1,000 deaths from all causes.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
163	254	251.92	160	247	16	163	87	125	288	57	77	161	299
7	44	215.57	26	49	3	38	10	21	25	11	11	53	26
156	210	258.77	134	198	13	125	77	104	263	46	66	108	267

November, '87.

236	210	254.08	175	243	14	158	63	146	357	76	120	23	301
35	36	213.35	21	62	1	46	14	32	55	15	27	130	21
201	174	264.70	154	181	13	112	49	114	302	61	93	100	280

November, '88.

108	303	260.83	195	250	22	194	80	175	299	67	141	165	305
15	59	220.61	32	70	4	45	16	42	41	11	26	104	30
93	244	271.91	163	180	18	149	64	133	258	56	115	61	275

November, '89.

83	226	204.82	218	222	27	186	88	159	324	76	121	162	365
2	60	198.18	36	39	9	46	20	42	65	25	25	88	46
81	166	206.84	182	183	18	140	68	117	259	51	96	74	319

November, '90.

109	217	202.04	250	269	16	215	81	169	320	89	146	170	381
10	53	178.12	59	67	5	52	25	51	57	20	31	104	54
99	164	209.18	191	202	11	163	56	118	263	69	115	66	327

TOTALS OF DEATHS IN SANITARY DISTRICTS

Winter

MARITIME DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
Total deaths	77,749	28,494	36.6	172.88	233	11	542	632	98	1,976	1,494	334
Specified localities...	75,429	27,965	37.7	174.85	224	11	520	622	76	1,965	1,479	327
Rest of district ...	2,320	539	23.2	104.74	9	0	22	10	22	11	15	7

Spring

Total deaths.....	77,427	28,974	37.4	175.08	324	14	304	584	208	2,129	1,053	450
Specified localities...	74,784	28,415	37.9	177.73	311	14	290	571	142	2,093	1,029	439
Rest of district.....	2,643	559	21.1	113.50	13	0	14	13	66	36	24	11

Summer

Total deaths	92,508	47,106	50.9	324.55	266	3	691	685	39	1,113	794	173
Specified localities...	89,482	46,069	51.4	326.71	257	3	676	655	9	1,099	788	169
Rest of district.....	3,026	1,037	34.2	260.74	9	0	15	30	30	14	6	4

Fall

Total deaths	69,180	28,220	40.7	209.39	194	4	1,295	886	23	861	578	143
Specified localities...	66,898	27,721	41.4	211.05	185	4	1,213	861	20	844	575	141
Rest of district.....	2,282	499	21.8	160.91	9	0	82	25	3	17	3	2

FOR FIVE YEARS, 1886–1890, BY SEASONS.

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Season.													
919	6,232	971	16,667	10,932	811	3,530	4,582	4,422	7,590	1,607	2,363	3,478	8,208
890	6,122	953	16,282	10,547	799	3,382	4,466	4,256	7,278	1,555	2,291	3,174	8,004
29	110	18	385	385	12	148	116	166	312	52	72	304	204
Season.													
942	5,749	1,799	14,392	10,330	923	3,621	3,754	4,556	8,181	1,734	2,756	3,134	9,345
924	5,674	1,769	13,988	9,882	898	3,487	3,607	4,360	7,887	1,676	2,673	2,800	9,115
18	75	30	404	448	25	134	147	196	294	58	83	334	230
Season.													
1,113	3,989	21,158	6,663	9,413	656	6,611	4,353	3,897	8,812	1,706	3,480	2,471	11,608
1,080	3,936	20,563	6,510	9,085	649	6,415	4,217	3,716	8,470	1,639	3,325	2,179	11,217
33	53	595	153	328	7	196	136	181	342	67	155	292	391
Season.													
819	4,690	4,993	9,597	9,535	562	4,504	4,633	4,038	6,752	1,654	2,702	2,613	9,114
799	4,600	4,877	9,417	9,210	544	4,333	4,499	3,882	6,451	1,589	2,627	2,368	8,866
20	90	116	180	325	18	171	134	156	301	65	75	245	254

TOTALS OF DEATHS IN SANITARY DISTRICTS FOR

Winter

HUDSON VALLEY DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
Total deaths	12,945	3,295	25.5	155.50	125	33	305	81	9	256	51	46
Specified localities...	9,534	2,719	27.4	168.44	109	33	247	53	8	190	32	29
Rest of district.....	3,411	576	16.8	119.31	16	0	58	28	1	66	19	17
Spring												
Total deaths	13,314	3,288	24.6	131.59	137	0	335	83	4	250	120	43
Specified localities...	9,539	2,672	28.0	157.45	127	0	287	55	3	180	113	37
Rest of district.....	3,775	616	16.3	92.71	10	0	48	28	1	70	17	6
Summer												
Total deaths	13,937	5,108	36.6	286.85	131	0	288	104	1	124	92	17
Specified localities...	10,494	4,221	40.2	304.26	121	0	215	80	1	94	84	9
Rest of district.....	3,443	884	25.6	229.74	10	0	73	24	0	30	8	8
Fall												
Total deaths	11,973	3,346	27.9	216.13	103	0	426	134	1	155	13	21
Specified localities...	8,787	2,731	31.0	230.90	94	0	315	96	1	129	9	13
Rest of district.....	3,186	615	19.3	175.45	9	0	111	38	0	26	4	8

FIVE YEARS, 1886–1890, BY SEASONS — (*Continued*).

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Season.													
110	903	94	2,128	1,760	132	742	496	1,269	1,444	335	398	1,366	880
95	733	77	1,647	1,343	99	557	347	1,000	1,054	230	266	709	673
15	170	17	481	407	33	185	149	269	390	105	132	657	207
Season.													
111	537	122	2,191	1,881	136	847	538	1,285	1,372	319	473	1,540	1,070
87	405	108	1,535	1,403	103	616	345	994	947	239	317	768	841
24	132	14	556	478	33	231	193	291	425	80	156	772	229
Season.													
151	573	2,503	798	1,348	109	1,078	527	1,102	1,500	342	681	1,157	1,245
118	450	2,021	642	1,001	83	810	382	867	1,096	218	489	611	931
33	123	482	156	347	26	268	145	235	404	124	192	546	314
Season.													
114	971	650	1,123	1,499	72	864	510	1,063	1,245	295	501	1,150	1,035
91	834	457	914	1,109	56	624	373	818	852	208	356	610	806
23	137	193	209	390	16	240	137	245	393	90	145	540	229

TOTALS OF DEATHS IN SANITARY DISTRICTS FOR

ADIRONDACK AND NORTHERN DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths, per 1,000 deaths from all causes.	Cholera infantum fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Erysipelas.
Winter												
Total deaths	1,992	411	21.0	108.57	37	0	50	3	9	34	9	14
Specified localities...	1,677	436	25.1	120 45	23	0	33	2	0	20	6	9
Rest of district	3,173	389	17.9	95.17	14	0	27	1	9	14	3	6
Spring												
Total deaths	4,186	813	19 5	130 54	45	0	49	13	3	33	64	17
Specified localities...	1,794	424	23.6	126.89	34	0	19	3	3	5	33	19
Rest of district.....	3,421	389	14 3	94.56	11	0	31	4	0	15	41	7
Summer												
Total deaths	1,[illegible]	1,121	39 3	250 54	37	1	54	14	1	15	34	9
Specified localities .	1,[illegible]	541	38 4	343 71	13	1	35	9	1	11	4	
Rest of district .	1,[illegible]	471	37 1	141 9	14	1	30	11	1	4	15	5
Fall												
Total deaths .	1,[illegible]	701	26 6	158 [illegible]	13	1	147	11	1	32	7	13
Specified localities .	1,[illegible]	446	34 1	174 38	11	1	89	3	1	13		
Rest of district ..	1,[illegible]	475	11 6	136 74	7	1	78	11	1	17	1	8

FIVE YEARS, 1886–1890, BY SEASONS.—(*Continued*).

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Season.													
32	204	26	647	492	55	237	127	274	388	115	124	660	339
16	91	13	240	212	22	86	54	122	187	54	51	235	131
16	113	13	407	280	33	151	73	152	201	61	73	431	208
Season.													
34	138	33	577	501	58	293	118	287	418	148	134	773	419
11	62	23	247	203	23	125	46	125	185	76	54	274	186
23	76	10	330	298	35	168	72	162	283	72	80	499	223
Season.													
40	127	512	189	435	53	274	128	272	384	131	162	561	355
14	68	317	87	203	23	96	51	123	193	58	78	209	180
26	59	194	102	232	30	178	77	149	191	73	94	352	175
Season.													
28	182	325	259	424	35	277	119	282	363	118	128	585	385
12	80	137	104	186	14	104	35	126	158	50	56	199	154
16	102	188	155	238	21	173	84	156	205	68	72	386	181

TOTALS OF DEATHS IN SANITARY DISTRICTS FOR

Winter

MOHAWK VALLEY DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
Total deaths	5,380	1,091	20.1	123.13	47	0	77	18	1	53	25	13
Specified localities	3,561	790	21.3	150.38	36	0	46	7	1	45	15	10
Rest of district	1,809	291	16.0	69.54	11	0	31	3	0	8	0	3

Spring

Total deaths	5,525	1,182	21.3	105.69	61	0	90	20	0	56	37	14
Specified localities	3,513	896	25.4	122.40	48	0	59	11	0	37	22	9
Rest of district	2,022	287	14.1	76.65	13	0	31	9	0	19	15	5

Summer

Total deaths	5,923	1,860	31.9	283.06	48	0	134	32	0	29	25	13
Specified localities	3,912	1,459	37.2	266.80	36	0	83	26	0	18	22	8
Rest of district	2,011	431	21.4	184.48	13	0	41	8	0	13	7	5

Fall

Total deaths	5,375	1,262	23.4	205.76	17	0	234	41	0	28	4	9
Specified localities	3,416	875	25.6	225.49	10	0	147	30	0	22	3	4
Rest of district	1,959	387	19.7	166 83	7	0	77	11	0	6	1	5

FIVE YEARS, 1886–1890, BY SEASONS—(*Continued*).

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Season.													
33	367	44	816	670	40	290	199	388	598	157	182	754	93
28	311	35	529	477	30	168	124	267	426	99	120	321	215
5	56	9	287	193	10	122	75	121	172	56	62	433	153
Season.													
24	233	50	746	703	60	363	203	472	684	191	198	832	486
18	180	46	490	448	44	210	135	316	511	125	120	339	326
6	53	4	256	255	16	153	68	156	173	66	78	493	160
Season.													
33	216	969	336	637	36	421	230	414	707	253	291	699	516
23	170	741	243	445	23	243	149	266	502	159	183	329	368
10	46	228	93	192	13	178	81	148	205	94	108	370	148
Season.													
27	424	332	444	565	44	434	247	407	603	185	250	766	443
18	350	186	318	397	25	267	156	259	441	111	149	329	302
9	74	146	126	168	19	167	91	148	162	74	101	427	141

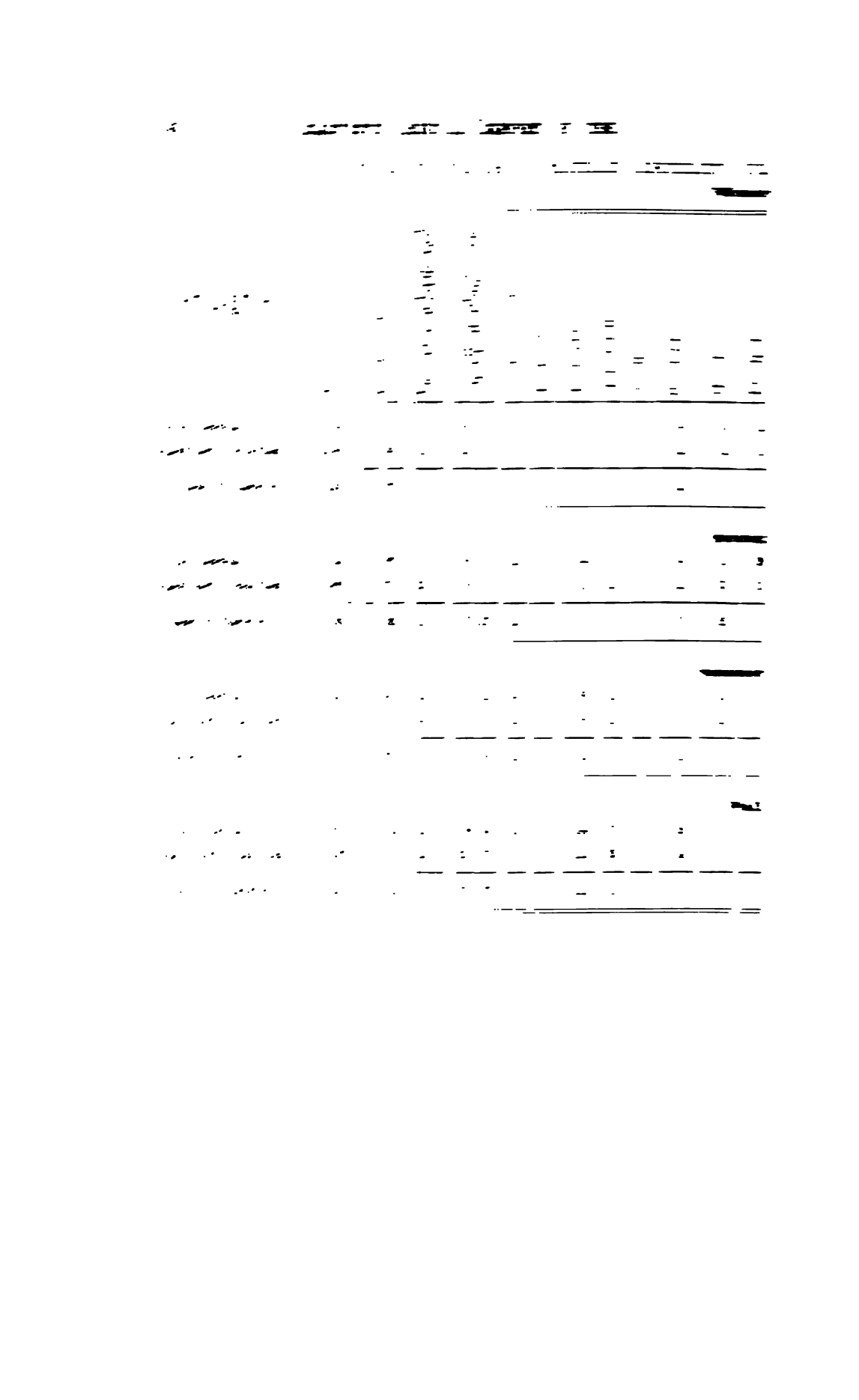
TOTALS OF DEATHS IN SANITARY DISTRICTS FOR

Winter

SOUTHERN TIER DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
Total deaths	3,323	596	17.9	125.48	36	0	75	24	1	24	16	17
Specified localities...	1,766	460	26.0	156.28	23	0	53	12	0	14	9	10
Rest of district.....	1,557	136	8.7	90.56	13	0	22	12	1	10	7	7
Spring												
Total deaths	3,860	746	19.3	100.51	29	0	46	22	0	51	55	14
Specified localities...	2,095	493	23.5	109.78	15	0	29	17	0	22	34	8
Rest of district.....	1,765	253	14.3	94.05	14	0	17	5	0	29	19	6
Summer												
Total deaths	3,892	1,040	26.7	217.11	15	0	84	41	0	25	22	8
Specified localities...	2,521	790	31.3	238.00	6	0	52	23	0	15	19	5
Rest of district.....	1,371	250	18.2	179.43	9	0	32	18	0	10	3	3
Fall												
Total deaths	3,812	771	20.2	205.92	14	0	207	60	0	29	15	9
Specified localities...	2,022	511	25.2	226.58	9	0	135	31	0	17	9	5
Rest of district.....	1,790	260	14.5	183.24	5	0	72	29	0	12	6	4

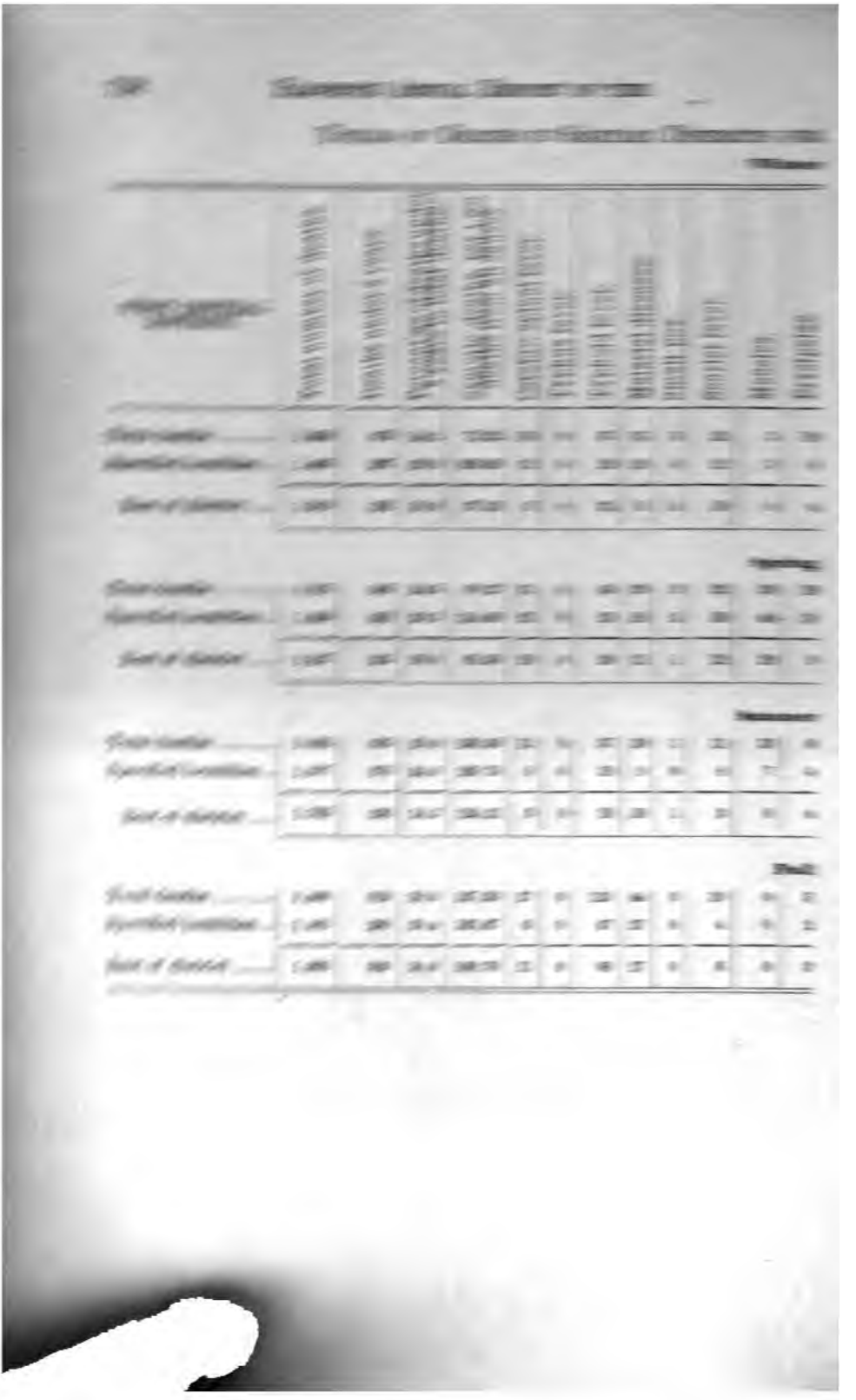
FIVE YEARS, 1886–1890, BY SEASONS — (*Continued*).

Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Season.													
20	175	29	538	301	43	224	116	262	387	119	149	517	299
13	116	26	314	171	19	118	59	129	197	60	103	190	182
7	59	3	224	130	24	106	57	133	190	59	46	327	117
Season.													
28	120	33	598	312	46	242	127	319	476	128	190	580	356
17	70	18	334	117	30	120	69	194	262	64	112	203	240
11	50	15	264	195	16	122	58	125	214	64	78	377	116
Season.													
35	69	546	194	303	41	317	116	271	432	154	225	428	356
21	46	412	111	187	26	194	56	150	247	84	238	162	244
14	23	134	83	116	15	123	60	121	185	70	87	266	112
Season.													
27	177	248	326	377	45	296	129	285	405	133	203	496	332
18	110	124	179	221	35	165	58	156	196	76	100	180	209
9	67	124	147	156	10	131	71	129	209	57	103	316	123



FIVE YEARS, 1886–1890, BY SEASONS — (*Continued*).

Season.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
	13	224	46	759	568	62	252	181	408	515	153	169	826	307
	5	134	42	415	331	39	119	77	230	281	84	96	245	140
	8	90	4	344	237	23	133	104	178	234	69	73	581	167
	26	144	38	820	648	70	307	193	467	581	168	193	880	427
	13	81	28	466	391	37	140	88	252	335	88	100	270	216
	13	63	10	354	257	31	167	105	215	246	80	93	610	211
	46	97	933	228	513	65	335	183	363	561	201	257	656	382
	34	60	734	127	338	43	167	95	189	347	97	133	217	211
	12	37	199	101	175	22	168	88	174	214	104	124	439	171
	22	210	365	378	530	63	342	172	432	477	177	235	732	309
	13	132	216	230	298	43	162	89	214	264	92	153	273	177
	9	78	149	148	232	20	180	83	218	213	85	82	459	132



FIVE YEARS, 1886-1890, BY SEASONS — (*Continued*).

Season.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
	14	102	18	474	381	20	193	167	297	438	111	111	646	247
	10	61	11	216	177	8	77	63	119	214	45	53	187	114
	4	41	7	258	204	12	116	104	178	224	66	58	459	133
Season.														
	20	75	26	477	460	46	251	148	297	431	123	140	784	269
	12	42	17	217	193	15	113	75	115	210	48	64	255	115
	8	33	9	260	267	31	138	73	182	221	75	76	529	154
Season.														
	19	54	348	143	397	24	228	172	231	420	130	181	594	276
	10	33	198	90	196	14	100	79	113	198	52	76	206	166
	9	21	150	53	201	10	128	93	118	222	78	105	388	110
Season.														
	12	96	277	221	356	24	248	130	295	378	130	166	627	279
	4	53	103	114	186	15	119	56	136	149	40	70	209	125
	8	43	174	107	170	9	159	74	159	229	90	96	418	154

TOTALS OF DEATHS IN SANITARY DISTRICTS FOR

Winter

LAKE ONTARIO AND WESTERN DISTRICT.	Total number of deaths.	Deaths under 5 years.	Percent'ge of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhus fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.
Total deaths	10,551	2,565	24.3	114.57	61	0	160	59	16	123	50	36
Specified localities...	8,265	2,201	26.5	124.13	52	0	122	48	15	101	42	30
Rest of district	2,286	364	15.9	84.42	9	0	38	11	1	22	8	6
Spring												
Total deaths	**12,118**	**3,581**	**29.5**	**118.50**	**152**	**0**	**133**	**88**	**1**	**122**	**118**	**63**
Specified localities...	**9,607**	**3,191**	**33.2**	**127.19**	**136**	**0**	**102**	**67**	**1**	**100**	**85**	**55**
Rest of district	**2,511**	**390**	**15.5**	**85.22**	**16**	**0**	**31**	**21**	**0**	**22**	**33**	**8**
Summer												
Total deaths	13,335	6,085	45.6	295.91	115	0	198	85	7	71	85	19
Specified localities...	10,986	5,567	50.6	318.13	103	0	154	66	6	61	71	15
Rest of district	2,349	518	22.0	191.57	12	0	44	19	0	10	14	4
Fall												
Total deaths	12,376	4,419	35.7	234.16	80	0	503	131	31	125	34	22
Specified localities...	9,746	3,910	40.1	242.35	68	0	384	98	30	98	24	17
Rest of district	2,630	509	19.3	203.80	12	0	119	33	1	27	10	5

FIVE YEARS, 1886–1890, BY SEASONS — (*Concluded*).

Season.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
	53	592	69	1,438	1,172	111	603	303	672	1,274	317	404	871	1,141
	43	519	54	1,104	950	91	427	226	495	1,045	216	324	368	968
	10	73	15	334	222	20	176	77	177	229	101	80	503	173
	75	551	103	1,884	1,510	128	722	439	840	1,777	342	497	1,118	1,527
	64	490	92	1,536	1,218	103	553	356	656	1,518	206	406	527	1,343
	11	61	11	348	292	25	169	83	184	259	136	91	591	184
	83	294	2,989	745	1,224	79	1,062	384	700	1,667	336	768	839	1,687
	62	257	2,700	654	980	55	884	298	527	1,416	238	622	443	1,484
	21	37	289	91	244	24	177	86	173	251	98	146	396	203
	63	699	1,210	998	1,231	95	916	399	774	1,588	365	605	888	1,645
	55	630	958	824	944	73	689	314	586	1,345	283	485	409	1,468
	8	69	252	174	287	22	227	85	188	243	82	120	479	177

SANITARY HISTORY OF 1890.

The most remarkable epidemic that has occurred since the State Board of Health came into existence is that of Influenza, which appeared about the close of 1889. There has been none which caused so great mortality, nor which has been so widespread in its influences.

The incidence of the epidemic appeared from the returns to be practically simultaneous throughout the State generally. The bulk of its effect fell upon the month of January. It began about ten days prior to the first of the year, but not so as to very materially affect the death rate of December. There were in that month about 1,000 more deaths than in the month of November, but very few more than in December, 1888. The infant mortality was comparatively less, as was also the zymotic mortality, both of which were characteristic to a very marked degree of the period when the epidemic was at its height (the deaths from influenza not being classed among those from zymotic causes); neither was there much perturbation in proportions of deaths from local diseases, except in that of acute respiratory diseases. Here there were about 250 more deaths than in the corresponding month of 1888.

Almost the entire immediate influence of the epidemic fell upon January, with the effect of producing a much larger number of deaths than has ever occurred in one month in this State. Adding the deaths reported since the issue of the bulletin, the mortality for that month is a little over 13,000.

There were over 5,000 more deaths than the average for January for the five years preceding, and there were more than 2,000 deaths more than occurred in the previous July, which is always the most fatal month of the year, because of the large mortality from diarrhœa. How many deaths actually occurred directly from influenza it is impossible to state, for no record was kept of the number of deaths returned as from this cause. But such a record would be comparatively valueless, since as an unfamiliar and unexpected disease its appearance was not recognized and more than that because it in most cases was probably only contributory to a fatal issue. But that this epidemic was responsible for the entire increase in the mortality of the month is without question. There was no increase in the existence of ordinary zymotic dis-

eases, not only because the proportio
causes was far below the average, being
from all causes, but because the actu
ordinary zymotic diseases was less
than in January, 1889. There were
reported from influenza, or *la grip*
but there were 4,000 more deaths in Janua-
ary, 1889, and it is safe to say that this disease was
this increase.

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The disease fell upon the local diseases generally. Most of these were acute respiratory diseases, from which there were 2,500 more deaths than in January, 1889; consumption was also increased in its death rate by about 700; and diseases of the digestive, circulatory, urinary and nervous systems all by from 100 to 200 deaths. Deaths from old age were increased by 150 above the average, from cancer about seventy-five, and there was a large increase in the deaths from unclassified causes, which includes according to the system followed in this office, other constitutional and developmental causes of death.

In February there was a continuance of the increased mortality but to a much less degree, there being 400 more deaths than in the same month of 1889. As in January the proportion of deaths from zymotic diseases was very low, being about fifty less per 1,000 deaths than in the preceding February. Deaths from all local diseases continued as in January much above the average. The number of deaths reported as directly due to it was small, but it was frequently reported as contributory.

The death rate of 134 cities and large villages was 21.24 per 1,000 inhabitants, but was no higher than in February, 1889, which would appear to show that the mortality was during this month largely rural. In January the death rate of these localities was twenty-nine per 1,000 population.

In March the extraordinary increase in mortality from Influenza had largely subsided. The average daily death rate was 299, having been 306 in February and 398 in January, not counting the delayed returns. In April it fell to 292 and in May to 280, which was not far from the daily average for the entire year 1889.

Not less than 5,000 deaths occurred during the first four months of the year in excess of the average, and for which no other cause is accountable than that of Epidemic Influenza. During this

...re were but a little over 4,000 deaths from zymotic ..., which is much below the average for this season com... with the total number of deaths, of which there were ... These deaths were reported from about five and a half ...illions of population. There would appear to have been one death in a little over 1,000 population during this period from Influenza. The effects of this epidemic were not, however, limited to this period, for although the evidence of increase of mortality was lacking subsequently to this time, still for several months later this cause was given as contributory to the cause of death, and it is unhesitatingly true that even through the whole year there were cases of disease and of death also traceable to this originating or aiding in its production.

There are no records to show how many of the population were affected by the epidemic. It is probably true that nearly fifty per cent of the entire population were in some degree affected by it. In the majority of these cases the disease was mild and of short duration. It was a compound disease, consisting of an essential fever and a local catarrhal inflammation. This latter fell upon the respiratory or digestive systems for the most part, and was followed by depression and weakness in severe cases, referable to disturbance of the nervous system. Those in whom the respiratory system was affected had coryza, cough and dyspnœa; bronchitis and pneumonia followed with many, directly due to Influenza. There were 2,400 more deaths in January than in the January preceding. It would appear that the disease was more severe, and more likely to be followed by sequelæ at the height of the epidemic than at its onset. With those in whom the digestive system was affected, vomiting, diarrhœa and gastro-hepatic derangement accompanied and followed the disease. There were 125 more deaths in this group in January than in January 1889. Among deaths returned from nervous diseases there was an increase of 150 deaths. There was also a very considerable increase in the number of deaths returned as from disease of the circulatory and urinary systems.

Besides affecting these organs directly, inflammation of which constituted a part of the disease, there were a large number of cases in which a fatal termination was hastened in persons weakened and vulnerable by pre-existing disease. Consumption was aggravated by it. There were 700 more deaths from this

cause in January than in January of 1889. It would appear in some cases to have been a sequel of the influenza, deaths from this cause being reported late in the year which began as influenza. Old age was given as the cause of about 150 more deaths than in January, 1889. Deaths from unclassified causes exceed in January, 1890, those of January, 1889, by 500, this class including a large number of causes such as rheumatism, struma and other constitutional conditions which rendered the individual less able to resist the effect of this febrile affection.

Children and infants either generally escaped the disease or were but lightly affected by it, since although the total mortality was so largely increased, there were 750 fewer deaths under the age of 5 years in January than in the corresponding month of the preceding year. It is probable that old people were also less likely to be affected by it than adults, but being less able to resist it were more likely to succumb, as is shown by the increase in their mortality.

THE ZYMOTIC MORTALITY.

The following table shows the proportion of the deaths that occurred that were from zymotic diseases during the last year and the five years preceding, for the entire year and for the four seasons respectively. As no record of any value of the direct mortality from epidemic influenza has been kept it is not included.

IN EACH 1,000 DEATHS THERE WERE FROM ZYMOTIC DISEASES.

YEAR.	Winter.	Spring.	Summer.	Autumn.	Entire year.
In 1885	135.85	144.44	325.74	209.05	222.17
In 1886	161.51	142.70	294.18	237.46	217.23
In 1887	177.30	167.05	337.66	220.93	227.80
In 1888	177.36	146.97	317.72	221.86	220.80
In 1889	173.77	166.47	303.47	187.12	207.66
In 1890	105.05	117.93	216.48	176.65	175.00

We learn from this table that the zymotic mortality of 1890, compared with the total mortality, is lower than that of either preceding year, not only for the entire year but for each of the four seasons. Reference has been made to one cause for this difference, viz.: The epidemic of influenza, which increased the total number of deaths without affecting the mortality from zymotic diseases. Taking the population from which returns have been received at 5,500,000, there was an annual death rate of 3.51 per 1,000 population in 1890; of 3.90 in 1889; of 4.12 in 1888; of 3.96 in 1887. As a larger proportion of population is represented in the returns of 1890, than of the years preceding, these differences would be even larger. It is evident that the zymotic mortality is less in the year just ended than usual. In fact, the actual number of deaths from these diseases is smaller than for either of the three years that preceded it.

Taking up these zymotic diseases in detail the following table has been prepared to show the proportion to the entire number of each disease separately for the past six years for the four seasons of the year.

PERCENTAGE OF DEATHS FROM EACH ZYMOTIC DISEASE TO THE TOTAL ZYMOTIC MORTALITY, BY SEASONS, FOR SIX YEARS.

Winter.

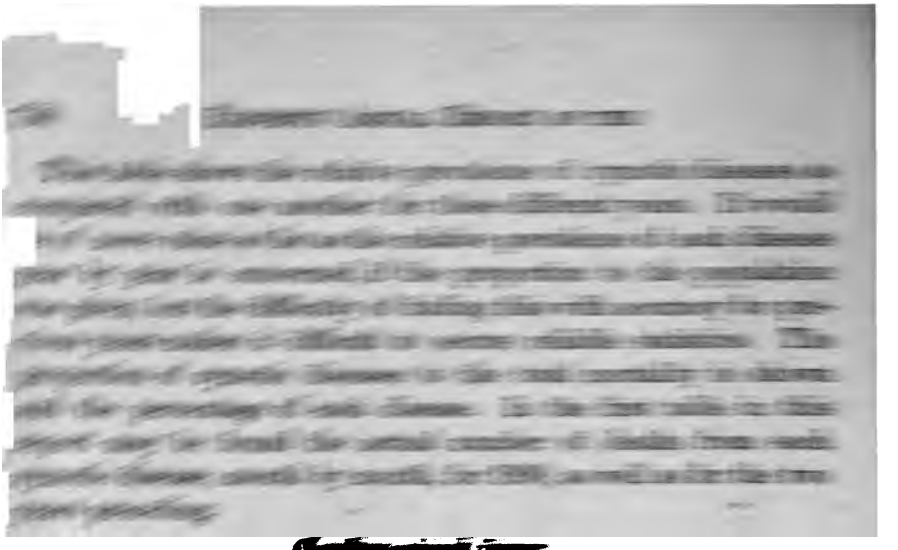
YEARS.	Total zymotic diseases.	Total per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Diphtheria.	Diarrhœal diseases.
1885	3,306	135.85	3.5	7.4	6.4	....	11.0	13.5	3.2	4.9	41.9	8.7
1886	3,265	161.51	3.1	5.6	5.5	0.5	11.3	1.4	3.3	12.0	47.6	7.2
1887	3,882	177.30	3.9	6.3	5.0	1.2	6.5	24.0	2.5	4.0	39.1	7.1
1888	4,077	177.36	2.5	7.4	4.4	1.0	16.5	4.0	2.2	2.6	51.1	6.8
1889	4,324	173.73	2.1	6.8	3.0	0.8	19.5	10.1	2.1	7.7	41.3	6.0
1890	3,192	105.00	3.2	10.0	4.7	....	8.2	3.9	2.6	9.0	49.0	9.0
Spring												
1885	3,130	144.44	4.0	5.9	7.0	....	12.7	17.1	4.6	5.4	31.9	11.3
1886	3,110	142.70	5.8	6.1	7.3	0.6	11.7	2.9	4.4	11.0	40.7	9.3
1887	3,899	167.05	3.8	4.2	5.0	2.0	8.3	9.2	3.3	2.7	38.9	22.5
1888	4,074	146.97	4.7	4.5	4.4	2.6	18.8	6.0	3.2	3.5	43.1	8.7
1889	4,488	166.33	2.6	4.6	3.2	....	22.8	9.0	2.6	9.2	37.2	8.0
1890	3,363	117.90	4.7	6.4	4.0	....	8.5	14.5	3.7	7.6	40.7	10.0

Summer.

1885	7,663	325.74	1.6	2.8	3.5	....	3.3	3.3	0.8	3.2	11.2	70.1
1886	7,027	294.18	2.1	3.1	2.5	....	2.3	2.6	0.7	5.3	15.3	66.3
1887	9,174	337.66	1.6	3.8	2.5	0.3	2.5	1.4	0.6	1.5	12.5	73.0
1888	9,267	317.72	1.1	3.1	2.1	0.2	5.3	3.4	0.6	3.4	13.5	67.2
1889	8,674	305.47	1.2	4.4	2.4	....	3.1	1.3	0.5	4 2	12.1	70.3
1890	8,454	216.40	1.5	3.9	2.4	....	1.7	3.7	0.6	4.3	10.4	71.4

Autumn.

1885	3,751	209.05	2.2	11.2	7.1	0.5	4.5	0 9	1.2	5.6	32.5	34.2
1886	4,725	237.46	2.5	11.1	6.1	....	3.3	5.6	1.2	5.0	34.2	30.6
1887	5,076	220.93	2.1	11.5	6.5	0.4	6.5	1.2	1.0	1.5	42.2	28.0
1888	5,153	221.86	1.6	14.0	5.3	0.6	8.0	2.5	0.7	6.5	23.0	37.6
1889	3,415	187.12	1.7	19.8	7.2	....	4.8	1.2	1.4	6.2	41.4	45.1
1890	4,326	176.60	2.0	15.4	5.4	...	4.6	3.5	0.9	5.7	24.2	38.0





the proportion of mortality, as compared with other zymotic diseases, to ten per cent. The table shows that every year its time of special prevalence is the fall; nearly half the total mortality for the year occurred during this season.

The following table shows the relative prevalence of typhoid fever, as compared with the total mortality from all causes for the last six years, in the eight sanitary districts:

In Each 1,000 Deaths there were from Typhoid Fever in the—

	1876.	1876.	1877.	1878.	1879.	1880.
Maritime district	8.87	8.41	8.55	8.66	9.65	9.10
Hudson Valley district	27.85	27.28	27.27	22.22	23.14	19.10
Adirondack and Northern district	19.35	20.58	24.00	18.84	23.01	16.40
Mohawk Valley district	19.53	21.91	20.45	21.98	22.32	49.10
Southern Tier district	23.55	26.00	30.40	23.38	23.92	23.05
East Central district	19.64	27.45	20.50	23.65	24.00	13.16
West Central district	24.78	20.42	19.00	17.23	19.53	18.33
Lake Ontario and Western district	20.85	19.18	19.45	23.07	21.23	21.37
Entire State	18.27	18.47	18.75	14.18	14.96	13.35

Malarial Diseases.

Of the 732 deaths occurring from these causes in 1890, nearly one-half occurred in the four months from August to November. The time of least prevalence is the spring months. The increase in prevalence corresponds quite closely with that from typhoid fever. The total number of deaths from this cause during the year is a little less than that of the years preceding. There is room for belief that of these essential fevers there is not the accuracy of diagnosis that is made in other zymotic diseases and that very likely with all three of those noted the returns are to some degree confused among each other and perhaps include some diseases that should not be.

Small-pox.

During the eighteen months prior to May, 1889, there was a general prevalence of small-pox in various parts of the country and in that period of time it occurred in about fifty localities in this State, having been imported from several sources. There was not a month in which deaths failed to be reported in the bulletin about 250 occurring altogether.

During 1890 four deaths only have occurred. In March a case appeared in Cohoes. Its origin was never satisfactorily ascertained, but there seemed reason to suspect that it was contracted from rags used in a mill by one employed in handling them. Three or four cases followed this, one of them in Schenectady, and one ended fatally. Another small outbreak occurred in Dansville, attributed to the same cause as the one in Cohoes, and one death was reported from there. Besides these, two deaths were reported from New York city. There has not been a case of small-pox in the State since July.

Measles.

This disease varies greatly in its prevalence, having periods of prevalence and of epidemic occurrence, following by decline. Its mortality rate, as compared with the total number sick, is much more uniform than with most of the infectious diseases, and may be taken as a gauge of prevalence. Its variability of prevalence is seen by the last table, where there is a difference of from one to seventeen per cent of the total mortality in the seasons of different years. In 1865 measles caused 10.45 per 1,000 of the total mortality; in 1886, 10.30; in 1887, 12.50; in 1888, 9.04; in

1889, 9.65 and in 1890, 9.70. Toward the close of 1889 very little measles was reported, almost no deaths from it occurring; it began to rise and the number of deaths increased to its height in the spring, at which season it seemed most likely to increase; this diminished through the remainder of the year. There were 1,072 deaths during the twelve months covered by this report.

Whooping cough.

This, like measles, varies greatly in prevalence. It was but little prevalent at the close of 1889, increased during the winter and spring, and, after a diminution during the summer, again increased in fatality in the fall. It has been less prevalent in 1890 than in 1889, but has been the reported cause of more deaths than there were from measles. In 1885 there were reported from it 834 deaths; in 1886, 1,244; in 1887, 447; in 1888, 902; in 1889, 1,332; in 1890, 1,158. During the past three years 10.40 deaths in each 1,000 deaths from all causes have been from whooping cough.

Scarlet fever.

The State has been more free from this disease than for years. The actual number of deaths from it is hardly one-third what it was during either of the two years preceding it. In each 1,000 deaths from all causes there were, in 1885, 14.5 from scarlet fever; in 1886 there were 11.7; in 1887 there were 13.2; in 1888 there were 22.8; in 1889 there were 21.9, and in 1890 there were 7.5. The increase in its mortality which began in the latter part of 1887 continued unabated through 1888 and reached the height of its prevalence in the spring of 1889; it suddenly abated in the summer of 1889 and continued at an unusually low rate from then till near the close of 1890. It began to show an upward tendency in October and toward the close of the year outbreaks of it have been reported from a number of localities. During the year there were about fifteen deaths from scarlet fever in each 100,000 population.

Diphtheria.

This has constituted a considerable part of the mortality of some localities, in which it has been constantly present through the year; numerous epidemics have been reported also of a transient character. It caused nearly 5,000 deaths during the year, which was one-fourth of the entire zymotic mortality; yet it

caused a very considerable less number of deaths than for any year that we have record of for the State. In each 1,000 deaths from all causes there were in 1885, 56.06 deaths from diphtheria; in 1886, 64.48; in 1887, 67.24; in 1888, 61.73; in 1889, 56.12, and in 1890, 44.81. There was moreover a steady decline in the number of deaths reported from this cause until October, when there was a sudden rise which continued into the month following. This October rise in the prevalence of diphtheria is a notable feature, and of uniform occurrence. The average mortality of the six years now statistically recorded shows a rise of one-third in the mortality of October over that of September from this cause, and the upward tendency continued during the two succeeding months. Various causes have been suggested, and doubtless numerous causes combine to produce it. The opening of the schools and bringing children together; the closing the buildings from fresh outside air as cold weather comes on; the upward drafts from basements and cellars possibly damp and ill-ventilated; the greater chance for getting sewer air into dwellings when closed and imperfectly ventilated; it is likely that these causes have more influence in causing an increase in the mortality from diphtheria in October and the months following it than any simple seasonal condition aside from them.

The largest problem now regarding diphtheria is how to get rid of it after it has gotten a foothold in a city. An epidemic of it has usually a short life when it appears in the rural village, for with suitable measures for isolation and disinfection there is no reason why it should linger there. But in the city the matter is much more complicated; not only because of the greater chances for new importation of the germs, for contagion because of the closer aggregation of susceptible individuals and for the fostering the germs in unclean tenement-houses, but mainly because of the sewers, in which the germs thrive indefinitely and which are connected with all the houses. As a matter of fact, diphtheria is found to constitute a much larger proportion of the deaths of cities than of the country. In those of the sanitary districts whose population is largely urban, the death rate of diphtheria is high, and of those in which it is rural the death rate is low. As bearing on this the following is copied from the last annual summary of the bulletin, arranged in the order of their urban population:

IN EACH 1,000 DEATHS THERE WERE FROM DIPHTHERIA IN THE

	1896.	1896.	1897.	1898.	1899.
Maritime district	58.28	71.43	75.40	67.95	63.00
Lake Ontario and Western district	49.53	58.25	58 67	51.09	35.78
Hudson Valley district	64.87	61.98	58.50	64.27	65.00
Mohawk Valley district	44.74	36.80	67.40	65.52	52.12
East Central district	32.74	40.34	30.60	43.10	33.79
Southern Tier district	27.57	41.08	44.40	34.18	34.54
West Central district	22.63	20.42	30.80	23.36	27.07
Adirondack and Northern district	72.08	43.35	49.00	46.57	33.87
Entire State	56.06	64.48	67.27	61.78	56.12

This table shows that the largest prevalence of diphtheria of all the districts is in the large maritime district which is made up almost entirely of the large cities of New York and Brooklyn. The fact that the next in order of city population has a lower mortality from diphtheria than either of the two districts next below, it is interesting since while it has a larger aggregate urban population, it has a less number of cities and large villages.

Now it is doubtless true that the significance of this fact is not far to look for, and it is that these smaller cities are less perfectly equipped with well considered drainage and sewerage systems and less attention has been given to fundamental sanitary requirements. While large enough to require a provision of sewers, water supply and the like, they have not such thoroughly organized appliances in connection with their local boards of health and have established less perfect subordination to them.

Some of the most persistent and constant centers for the existence of the disease are in the minor cities of the Hudson and Mohawk valley districts; they report deaths from this cause constantly, and are never free from it. Their death-rate from it is largely in excess of the larger cities of Buffalo, Rochester, Syracuse and Albany.

But in all the cities diphtheria has a foothold, and they are never free from it. With the exception of the Adirondack and northern district, which, while lowest in city population, has other conditions peculiar to itself; the more strictly rural and scattered the population of a district, and the freer it is from these conditions which are necessitated by the aggregation of a considerable number of people into limited areas, the more free it is from this disease. It does not linger long even in the considerable villages which are unprovided with sewers. There is no place to which diphtheria may not be imported, but the question always is with each of them whether, when introduced, it is to be quickly cut off, or whether it is to remain, and for an indefinite period of time continue. As I have said, it seems to be a difficult problem to settle in a locality which has attained a size to require the provision of appliances that are necessitated by becoming a city, and the existence of conditions consequent upon this.

Of the 110,523 deaths which occurred in 1890, 4,853, or 44.81 per 1,000, were from diphtheria. Of these 110,523 deaths, 91,486 occurred in the cities and large villages that have been spoken

of heretofore in this report as "specified localities" in the bulletin; of these 91,486 deaths, 4,375 were from diphtheria, or 47.82 in each 1,000. The remaining 19,047 deaths occurred in what is classed in the bulletin as "Rest of District," and includes those only which occurred in rural towns. Of these 19,047, there were 478 from diphtheria, or only about twenty-five deaths from this cause in each 1,000 deaths from all causes. In other words, as it will appear, the proportion of deaths from diphtheria in the population that was mainly a city population was nearly double that of the country population. Evidently diphtheria then has become, or at least is, a city disease. And it is so, not because any locality is so remote from the centers of life and travel as to escape the possible importation of the disease, but because an outbreak thus occurring in the country is amenable to management and the disease need not linger, whereas in the city there is strong likelihood that it will remain and the root of its existence may get beyond reach.

In 138 health districts including the cities, villages and large towns, there were 103.45 deaths in each 100,000 population. In the remainder of the State there were about forty deaths in each 100,000 population. In the entire reporting portion of the State there were 89.40 deaths in each 100,000 population from diphtheria.

That there is a diminishing tendency to diphtheria, year by year, is evident. This might be due to a disposition noted regarding some zymotic diseases to a cyclical development, and it has been observed by some writers that diphtheria comes and goes in cycles. It would appear that if this was the cause for its decrease that it would be general. In England diphtheria has been for years on the increase according to the local government board reports. It would appear that credit should be given to a considerable degree for its diminution to the establishment of a uniform system of health machinery in this State, which has now been in operation about ten years. The results of restraint of its spread by quarantine and disinfection have been proved to be more favorable than of any other disease. The people too are being educated as to its marked infectiousness and are, therefore, more ready to co-operate in its control. Filth and decay, which were once believed to be the prominent factors in its spread, are understood to be of secondary importance, a point in which the

medical profession needs yet to become less skeptical. There is still room for further diminution for a rate of mortality of nearly forty-five per 100,000 population can not be considered low. But the more intelligently it is managed the less will it exist, and while there are problems yet requiring solution a great deal can be accomplished by the present known system of seclusion and destruction of its germs.

Diarrhœal diseases.

In respect to its mortality there is no member of the zymotic group of diseases so important as this. It is to this class of diseases that the large mortality of July is due. There were 8,300 deaths from this cause in 1890, which is 2,300 more than were caused by diphtheria. It caused 7.5 per cent of the total mortality and more than fifty per cent of the zymotic mortality for the year. During the summer months over seventy per cent of the zymotic mortality is from diarrhœal diseases and nearly forty per cent in the three fall months. The proportion of deaths to the total mortality was less in 1890 than in the preceding years; in 1885 there were 9.08 per cent of the deaths from all diseases attributed to this cause; in 1886, 8.1 per cent; in 1887, 9.6 per cent; in 1888, 8.4 per cent; in 1889, 8.0 per cent.

A very large proportion of the mortality occurred in the cities, nearly three-fourths coming from the five cities of over 100,000 inhabitants. While certainly amenable to management, these diseases which occur to a large degree depend on conditions much less within the control of sanitary authorities than other of the zymotic diseases, falling heavily upon the poor in the large cities. Reduction of their prevalence would lighten more than anything else the city death rates.

Consumption.

The zymotic diseases do not include in its series consumption. It is not properly classed among diseases that are acute, that have a definite course and that are always infectious or contagious. But while the term consumption is used to designate a wasting disease of chronic duration, due to varied changes in the lungs, it is accepted that at least some of these changes in the lungs originate from a micro-organism developed in a pre-existing case, and this would place it in the category of zymotic

and preventable diseases. It is certain that there are other conditions that determine the development of consumption in an individual besides the micro-organism, but this is likewise true of all zymotic diseases, for they all vary in individual susceptibility to their respective disease germ. The investigations of the last few years make it probable that the only serious source of danger from this disease is its bacillus, and that without it most varieties of consumption (for in this connection it seems proper to consider it as a disease that is various in its forms) will not exist. This is sufficient to include it among the infectious diseases and to pursue the course with it which is fundamental in limiting the existence and spread of any contagious disease, that is, to destroy its primitive and causative micro-organism.

Attempts to restrict the spread of consumption, based upon the more or less well-proved theory of its infective nature, have been of two sorts — to establish a sort of quarantine of the sick; to destroy the germs which in its case exist mainly in the sputa. The former of these no one seriously proposes. It has been tried, so long ago as the latter part of the last century, being rigidly enforced in Naples for a long period of time, without practical result. If all infected persons could be held in strict seclusion and all infectious material destroyed, the disease might be abolished, but it is more than doubtful if the public would placidly consent to such wholesale measures. By the more moderate measures of collecting and destroying the sputa in which the germ exists, doubtless much could be gained. If the public were generally instructed regarding the infectiousness of this material coming from the lungs of those sick with consumption and as to how it might be prevented from coming into contact with the healthy, and could be induced to heed such regulations as might easily be formulated, there seems reason to believe that the spread of this disease could be to a great degree lessened. Practical results in this can hardly be obtained however except by the medical profession, although there is no doubt that such instruction as could be contained in a leaflet such as is issued for other contagious diseases would reach a portion of those affected by the disease and result in a moderate amount of good.

Apparently the most important contribution to the suppression of consumption that has ever been made is that which was promulgated towards the close of 1890 by Dr. Koch, of Berlin. This

eminent investigator after many years of study after what might prove a specific for this disease has proposed one, the nature of which has not been made public. It consists of a fluid substance which is introduced into the body by means of a hypodermic syringe. It has been given to large numbers for trial, in this country as well as Europe, and that it has been productive of certain definite results seems certain. It is necessary yet to wait further observations and for tests that time only can give. But, meantime, it seems certain that a substantial contribution has been made by Koch to limiting the existence of the disease which causes by far more deaths than any other at the present time.

During the year there were 13,484 deaths from consumption or about 225 deaths in each 100,000 population. This is higher than it has been for recent years, and is partly due to the epidemic of influenza early in the year. Prior to this year there was a steady decline year by year. In 1885 there were 139.75 deaths in each 1,000 deaths from all causes, from this cause; in 1886, 137.66; in 1887, 120.35; in 1888, 118.55; in 1889, 118.08, and in 1890, 122.

The following table, similar to that prepared for some of the prominent zymotic diseases, shows the distribution of the disease by sanitary districts and comparatively year by year:

IN EACH 1,000 DEATHS FROM ALL CAUSES THERE WERE FROM CONSUMPTION IN THE —

	1885.	1886.	1887.	1888.	1889.	1890.
Maritime district	143.58	140.52	121.80	124.10	123.20	133.20
Hudson Valley district	144.83	137.00	134.85	114.20	130.92	123.50
Adirondack and Northern district	147.82	137.90	122.00	110.91	121.76	114.44
Mohawk Valley district	143.67	132.30	111.25	115.36	113.50	112.56
Southern Tier district	114.25	100.95	94.40	100.73	88.49	89.21
East Central district	139.93	131.52	118.40	110.61	110.95	107.24
West Central district	155.08	141.08	115.40	112.20	110.35	113.89
Lake Ontario and Western district	130.00	125.77	105.55	103.60	104.46	110.56
The entire State	139.76	137.66	120.35	118.55	120.00	122.00

SUMMARY OF MORTALITY.

The effect of epidemic influenza on the organic diseases was very marked. Otherwise there was no notable deviation from the ordinary course of these classes of diseases. The following tables have been prepared to show the relative mortality from diseases from all causes as compared with that of past years. The first table shows the actual number of deaths for each month from the various diseases with the average for the preceding five years. It must be borne in mind that the returns of the past year have been much more perfect and so the mortality given is greater.

The second table gives a view of the comparative prevalence of diseases as shown by their mortality during 1889 and 1890.

MORTALITY BY MONTHS FROM VARIOUS CAUSES, COMPARED WITH THE AVERAGES FOR THE PRECEDING FIVE YEARS.

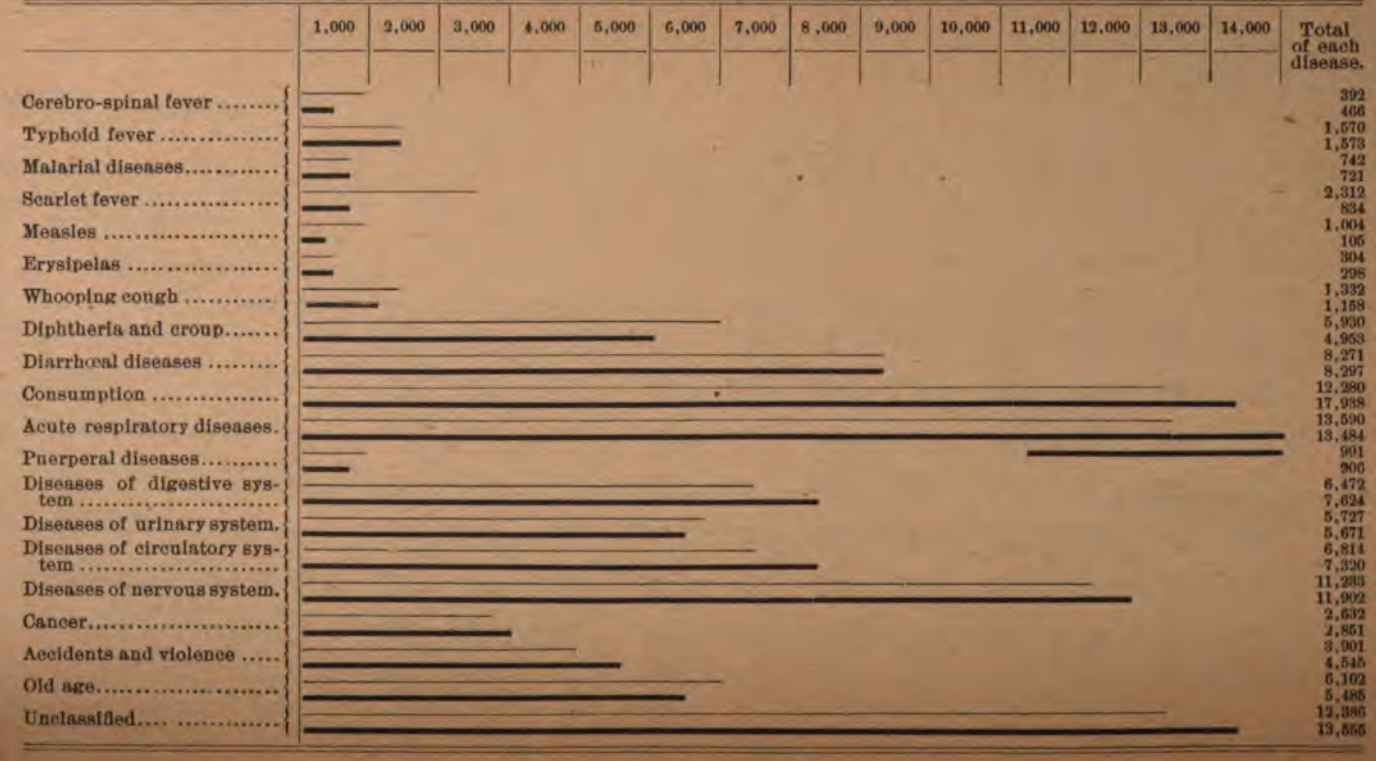
[Those for 1890 printed in heavy-faced type.]

DISEASES.	December, 1889.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.
Cerebro-spinal fever	37 **38**	41 **38**	39 **36**	47 **46**	54 **49**	53 **59**	44 **26**	43 **54**	39 **47**	33 **30**	36 **24**	27 **29**
Typhoid fever	134 **117**	77 **116**	64 **84**	70 **67**	63 **72**	52 **66**	46 **66**	86 **96**	160 **162**	219 **229**	215 **232**	151 **206**
Malarial diseases	65 **53**	61 **60**	52 **38**	61 **35**	68 **42**	64 **55**	61 **62**	65 **55**	90 **86**	105 **84**	101 **83**	74 **68**
Small-pox	7	12	9	13 **2**	13 **1**	18	5 **1**	6	2	6	5	4 .....
Scarlet fever	147 **73**	175 **93**	177 **96**	195 **88**	199 **78**	181 **58**	135 **67**	83 **45**	66 **34**	65 **40**	80 **60**	100 **103**
Measles	113 **33**	153 **42**	118 **50**	112 **94**	112 **186**	103 **200**	93 **160**	77 **91**	38 **69**	21 **29**	25 **47**	62 **74**
Erysipelas	32 **22**	31 **30**	36 **32**	46 **47**	44 **43**	42 **34**	25 **29**	16 **12**	13 **11**	13 **15**	15 **6**	20 **17**
Whooping cough	72 **84**	75 **114**	73 **92**	90 **110**	57 **76**	67 **67**	66 **88**	84 **129**	118 **149**	95 **102**	87 **84**	54 **63**
Croup and diphtheria	657 **546**	576 **516**	500 **509**	521 **505**	443 **432**	474 **416**	417 **360**	352 **290**	308 **230**	369 **237**	551 **370**	607 **442**
Diarrhœal diseases	95 **110**	87 **98**	81 **82**	207 **93**	108 **96**	131 **139**	791 **1,032**	3,979 **2,864**	1,946 **2,139**	1,114 **1,166**	368 **354**	124 **124**
Acute respiratory diseases	1,329 **1,631**	1,350 **3,847**	1,350 **1,950**	1,610 **1,929**	1,392 **1,781**	1,176 **1,538**	676 **972**	521 **706**	498 **666**	593 **710**	843 **1,001**	999 **1,207**
Consumption	1,018 **1,131**	1,048 **1,765**	977 **1,255**	1,058 **1,195**	1,106 **1,102**	1,093 **1,048**	892 **949**	953 **1,017**	993 **1,007**	926 **1,005**	981 **1,026**	923 **984**

Puerperal diseases	75 83	89 95	18 74	115 99	100 75	84 95	76 83	78 60	63 70	60 47	59 71	65 74
Diseases of digestive system	390 461	385 543	342 477	400 511	394 599	407 539	477 679	723 1,044	590 871	552 768	474 635	373 518
Diseases of urinary system	408 466	389 553	387 415	415 471	419 484	398 508	367 497	389 497	367 443	431 418	374 485	379 435
Diseases of circulatory system	532 657	490 724	469 566	550 709	521 691	443 691	467 541	461 543	422 537	445 530	467 597	491 554
Diseases of nervous system	872 949	805 1,107	779 937	896 1,051	877 1,046	849 999	845 1,000	1,035 1,069	843 1,195	762 871	749 894	704 851
Cancer	211 240	173 237	166 209	197 235	174 230	195 273	202 237	200 243	205 236	188 236	206 238	173 208
Accidents and violence	275 288	235 233	221 264	244 314	249 230	250 371	245 253	400 553	326 513	306 375	292 366	285 297
Old age	547 455	600 653	621 515	723 590	647 460	566 436	447 347	518 395	512 375	519 450	522 470	485 409
Unclassified	739 1,046	769 1,391	674 917	847 1,141	793 1,036	886 1,067	871 1,094	1,078 1,318	1,084 1,324	870 1,379	847 1,107	673 958

SUMMARY OF MORTALITY FOR 1889 AND 1890.

[The light line represents the mortality for 1889; the dark one for 1890.]



The death rate for the entire State per 1,000 population has been given at 19.65. This is higher than in 1889, 19.10. From zymotic diseases it was the lowest of all the years on record, 168.17 per 1,000 deaths from all causes, the actual number of deaths from them being 3,500 less than they were in 1889. This shows a large increase in the mortality from local diseases. The foregoing tables show this. So far as the existence of diseases which are likely to come under the care of boards of health is concerned, the year was an exceptionally healthy one, and ends with a fair prospect of a continuance of a good degree of freedom from the preventable diseases in the coming year.





MONTHLY BULLETINS.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

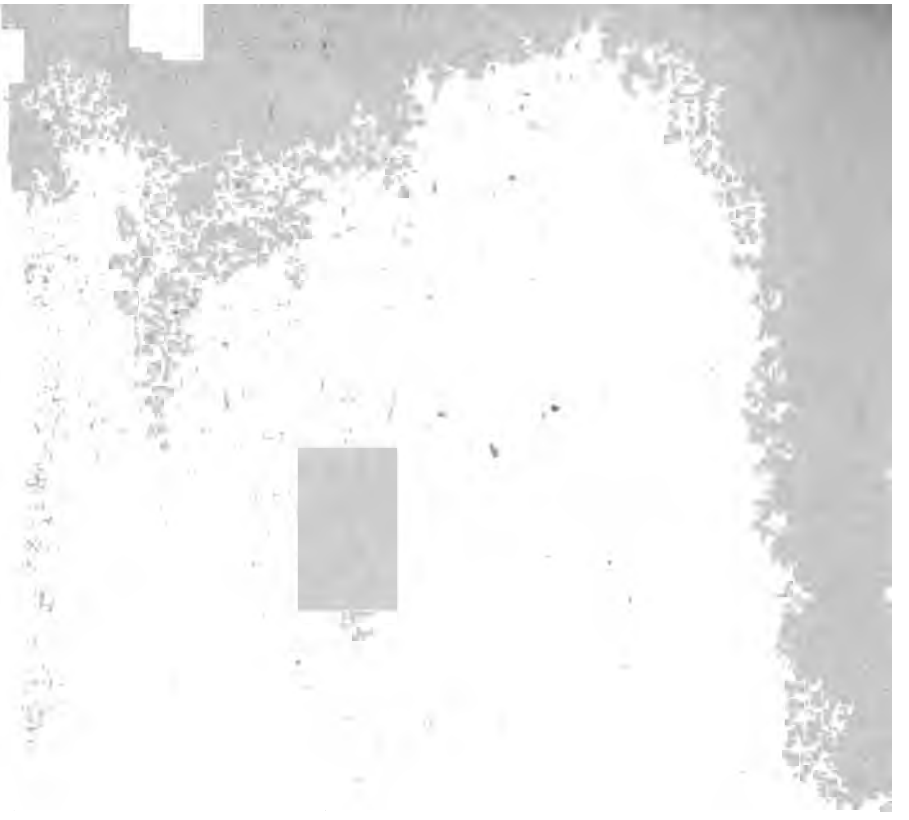
	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	7,649	.....	21.1	85 00	9	41
NEW YORK CITY	*1,622.000	4,745	34.44	27.2	83.70	8	20
BROOKLYN	*852,467	2,151	29.72	27.2	94.18	8	14
Gravesend	*5,000	9	21.60	22.2	.....	0	0
New Utrecht	*5,000	19	45.60	36.8	315.75	0	0
LONG ISLAND CITY	*40,000	40	12.00	50.0	325.00	0	0
Flatbush	*8,000	27	40.50	....	.....	0	0
Newtown	*10,000	31	37.20	32.2	161.00	0	0
Oyster Bay	*12,000	22	22.00	22.7	181.81	0	1
Hempstead	18,160	10	.....	40.0	.....	0	0
North Hempstead	8,000	13	19 50	7.7	.....	0	0
Huntington	8,100	16	23.88	6.2	.....	0	0
Jamaica	10,689	32	38.00	34.4	156.25	0	0
Southold	7,267	11	18.15	9.1	181.80	0	1
Sag Harbor	*3,000	6	24.00	....	.....	0	0
New Brighton	*15,000	45	36.00	15.5	155.55	0	0
Port Richmond	3,600	15	50.00	40.0	200.00	0	0
Westfield	7,000	15	26.00	6.6	.....	0	0
YONKERS	*31,000	51	19.74	19.6	.....	0	0
Westchester	*7,000	1	.....	....	.....	0	0
Mount Vernon	*11,000	26	28.36	23.0	38.45	0	0
Portchester	*4,000	8	24 00	25 0	125.00	0	0
Sing Sing	*6,500	15	27.68	....	.....	0	0
New Rochelle	*6,000	26	52.00	19.3	76.90	0	0
Peekskill	*7,000	14	24.00	21.4	71.43	0	0
Rest of district	.....	301	.....	20.0	60.01	0	5
HUDSON VALLEY DISTRICT: Totals	.....	1,333	.....	15.0	95.21	9	31
ALBANY	*103,000	353	41.12	21.0	119.00	3	13
COHOES	*20,000	58	34.80	10.2	102.85	1	2
TROY	*65,000	166	30.64	22.8	102.40	1	2
West Troy	*13,000	22	20.30	18.2	45.45	0	0
Hoosick Falls	*6,000	6	12.00	16.7	.....	0	0
Lansingburgh	*10,000	29	34.80	13.9	69.50	0	1
Green Island	*5,000	11	26.40	....	90.91	0	0
Greenbush	*8,000	20	30.00	15.0	.....	1	2
Cox-sackie	4,000	14	42.00	42.8	357.14	2	0
Catskill	*4,500	14	37.33	14.3	71.50	0	1
HUDSON	*13,000	24	22.16	12.5	83 33	0	0
KINGSTON	*21,000	35	20.00	14.3	171.42	0	0
Ellenville	3,000	4	16.00	....	.....	0	0
Marbletown	4,000	5	15.00	20.0	200.00	0	0
Esopus	4,736	11	26.75	27.2	363.63	0	0
Saugerties	*4,000	8	24.00	....	.....	0	0
POUGHKEEPSIE	*20,200	47	27.94	10.7	85.10	1	2
Fishkill	10,732	24	26 67	25.0	125.00	0	0
Wappinger Falls	*5,000	13	31.20	....	.....	0	0
NEWBURGH	*20,000	44	26.40	11.4	22.72	0	0
Port Jervis	*9,500	20	25.26	25.0	50.00	0	1
MIDDLETOWN	*10,000	19	22 80	5.2	.....	0	0
Goshen	4,500	13	34.65	7.7	.....	0	0
Nyack	*5,000	10	24.00	....	.....	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during January, 1890.

populations preceded by a star (*) are estimated to date: the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
45	....	63	33	18	59	337	76	2,476	1,193	48	269	376	369	590	139	201	198	1,109
27	0	47	24	8	46	156	69	1,502	797	20	168	241	199	303	92	147	79	791
16	0	14	6	8	8	133	5	745	283	22	71	103	116	220	30	40	51	266
0	0	0	0	0	0	0	0	2	3	0	1	1	0	2	0	0	0	0
0	0	0	0	0	0	6	0	5	0	0	0	0	2	2	1	1	1	0
0	0	0	0	0	2	10	1	15	2	1	1	1	0	1	1	3	2	0
0	0	0	0	0	0	3	0	6	6	0	1	1	1	2	2	1	1	3
0	0	0	0	0	0	5	0	11	1	0	0	0	3	1	0	0	2	8
0	0	0	0	0	0	3	0	4	2	1	2	0	2	2	0	0	1	4
0	0	0	0	0	0	0	0	5	2	0	1	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	7	1	0	1	1	0	1	1	0	1	0
0	0	0	0	0	0	0	0	7	0	0	0	0	1	0	0	1	7	0
0	0	1	1	0	0	3	0	8	4	0	4	1	3	3	0	0	1	3
1	0	0	0	0	0	0	0	1	0	0	1	2	0	1	0	0	3	1
0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	1	0	0
0	0	1	0	1	0	5	0	13	4	1	3	1	3	6	1	2	3	1
0	0	0	0	0	1	2	0	4	1	0	0	1	0	0	0	0	4	2
0	0	0	0	0	0	0	0	4	3	0	2	2	0	1	0	0	2	1
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1	0	0	0	0	0	0	0	9	5	0	1	1	1	2	1	0	2	3
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0	0	0	0	0	0	1	0	3	2	0	0	0	1	0	0	0	4	3
0	0	0	2	1	1	9	0	86	54	1	9	15	30	36	6	4	27	15
6	....	13	....	5	26	40	6	414	173	8	75	48	137	124	41	26	102	49
0	0	3	0	1	12	8	2	115	49	2	11	13	50	31	13	8	16	3
0	0	1	0	0	1	1	0	23	8	0	1	1	5	3	1	1	2	7
0	0	1	0	0	5	8	0	56	25	0	11	4	13	10	3	4	14	9
0	0	0	0	0	0	1	0	10	7	0	0	0	1	3	0	0	0	0
0	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	9	1	0	2	4	2	5	1	0	0	3
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0	0	0	0	0	0	0	0	8	1	0	1	0	1	3	0	1	2	2
0	0	0	0	0	0	0	0	9	1	0	2	1	2	3	0	0	0	1
0	0	0	0	0	0	0	0	0	4	0	0	0	0	3	1	0	4	1
0	0	0	0	0	0	0	0	5	1	0	2	1	1	0	0	0	0	0



MONTHLY BULLETINS.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in italics, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	7,649	.....	21.1	85 00	3	41
NEW YORK CITY	*1,622,000	4,745	34.44	27.2	83.70	2	20
BROOKLYN	*352,467	2,161	29.72	27.2	94.18	0	14
Gravesend	*5,000	9	21.60	22.2	.....	0	0
New Utrecht	*5,000	19	45.60	36.8	315.75	0	0
LONG ISLAND CITY	*40,000	40	12.00	50.0	325.00	0	0
Flatbush	*8,000	27	40.50	....	.....	0	0
Newtown	*10,000	31	37.20	32.2	161.00	0	0
Oyster Bay	*12,000	22	22.00	22.7	181.81	0	1
Hempstead	18,160	10	.....	40.0	.....	0	0
North Hempstead	8,000	13	19 50	7.7	.....	0	0
Huntington	8,100	16	23.88	6.2	.....	0	0
Jamaica	10,689	32	38.00	34.4	156.25	0	0
Southold	7,267	11	18.15	9.1	181.80	0	1
Sag Harbor	*3,000	6	24.00	....	.....	0	0
New Brighton	*15,000	45	36.00	15.5	155.55	0	0
Port Richmond	3,600	15	50.00	40.0	200.00	0	0
Westfield	7,000	15	26.00	6.6	.....	0	0
YONKERS	*31,000	51	19.74	19.6	.....	0	0
Westchester	*7,000	1	.....	....	.....	0	0
Mount Vernon	*11,000	26	28.36	23.0	38.45	0	0
Portchester	*4,000	8	24 00	25.0	125.00	0	0
Sing Sing	*6,500	15	27.68	....	.....	0	0
New Rochelle	*6,000	26	52.00	19.3	76.90	0	0
Peekskill	*7,000	14	24.00	21.4	71.43	0	0
Rest of district	.....	301	.....	20.0	60.01	0	5
HUDSON VALLEY DISTRICT: Totals	.....	1,333	.....	15.0	95.21	2	31
ALBANY	*103,000	353	41.12	21.0	119.00	3	13
COHOES	*20,000	58	34.80	10.2	102.85	1	2
TROY	*65,000	166	30.64	22.8	102.40	1	2
West Troy	*13,000	22	20.30	18.2	45.45	0	0
Hoosick Falls	*6,000	6	12.00	16.7	.....	0	0
Lansingburgh	*10,000	29	34.80	13.9	69.50	0	1
Green Island	*5,000	11	26.40	....	90,91	0	0
Greenbush	*8,000	20	30.00	15.0	.....	1	2
Coxsackie	4,000	14	42.00	42.8	357.14	2	0
Catskill	*4,500	14	37.33	14.3	71.50	0	1
HUDSON	*13,000	24	22.16	12.5	83 33	0	0
KINGSTON	*21,000	35	20.00	14.3	171.42	0	0
Ellenville	3,000	4	16.00	....	.....	0	0
Marbletown	4,000	5	15.00	20.0	200,00	0	0
Esopus	4,736	11	26.75	27.2	363.63	0	0
Saugerties	*4,000	8	24.00	....	.....	0	0
POUGHKEEPSIE	*20,200	47	27.94	10.7	85.10	1	2
Fishkill	10,732	24	26 67	25.0	125.00	0	0
Wappinger Falls	*5,000	13	31 20	....	.....	0	0
NEWBURGH	*20,000	44	26.40	11.4	22.72	0	0
Port Jervis	*9,500	20	25.26	25.0	50.00	0	1
MIDDLETOWN	*10,000	19	22.80	5.2	.....	0	0
Goshen	4,500	13	34.65	7.7	.....	0	0
Nyack	*5,000	10	24.00	....	.....	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during January, 1890.

populations preceded by a star (*) are estimated to date: the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
45	....	63	33	18	59	337	76	2,476	1,193	48	269	376	369	590	139	201	198	1,109
27	0	47	24	8	46	156	69	1,502	797	26	168	241	199	303	92	147	79	791
16	0	14	6	8	8	133	5	745	283	22	71	103	116	220	30	40	51	266
0	0	0	0	0	0	0	0	2	3	0	1	1	0	2	0	0	0	0
0	0	0	0	0	0	6	0	5	0	0	0	0	2	2	2	1	1	0
0	0	0	0	0	2	10	1	15	2	1	1	1	0	1	1	3	2	0
0	0	0	0	0	0	3	0	6	6	0	1	1	1	2	2	1	1	3
0	0	0	0	0	0	5	0	11	1	0	0	0	3	1	0	0	2	8
0	0	0	0	0	0	3	0	4	2	1	2	0	2	2	0	0	1	4
0	0	0	0	0	0	0	0	5	2	0	1	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	7	1	0	1	1	0	1	1	0	1	0
0	0	0	0	0	0	0	0	7	0	0	0	0	1	0	0	1	7	0
0	0	1	1	0	0	3	0	8	4	0	4	1	3	3	0	0	1	3
1	0	0	0	0	0	0	0	1	0	0	1	2	0	1	0	0	3	1
0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	1	0	0
0	0	1	0	1	0	5	0	13	4	1	3	1	3	6	1	2	3	1
0	0	0	0	0	1	2	0	4	1	0	0	1	0	0	0	0	4	2
0	0	0	0	0	0	0	0	4	3	0	2	2	0	1	0	0	2	1
0	0	0	0	0	0	0	0	14	14	1	2	2	4	5	0	1	4	4
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	9	5	0	1	1	1	2	1	0	2	3
0	0	0	0	0	1	0	0	5	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	3	6	0	0	1	1	1	1	0	1	1
0	0	0	0	0	0	1	1	15	1	1	0	1	1	0	2	0	1	2
0	0	0	0	0	0	1	0	3	2	0	0	0	1	0	0	0	4	3
0	0	0	2	1	1	9	0	86	54	1	9	15	30	36	6	4	27	15
6	....	13	....	5	26	40	6	414	173	8	75	48	137	124	41	26	102	49
0	0	3	0	1	12	8	2	115	49	2	11	13	50	31	13	8	16	3
0	0	1	0	0	1	1	0	23	8	0	1	1	5	3	1	1	2	7
0	0	1	0	0	5	8	0	56	25	0	11	4	13	10	3	4	14	2
0	0	0	0	0	0	1	0	10	7	0	0	0	1	3	0	0	0	0
0	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	9	1	0	2	4	2	5	1	0	0	3
0	0	0	0	0	0	1	0	7	0	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	0	2	2	1	0	3	2	3	1	0	0	1	2
0	0	1	0	0	2	0	0	5	0	0	1	0	2	0	1	0	0	0
0	0	0	0	0	0	0	0	2	0	0	2	2	5	1	0	1	0	0
0	0	1	0	1	0	0	0	6	4	0	1	0	7	3	1	0	0	0
2	0	0	0	0	0	4	0	10	4	0	3	3	6	0	0	2	1	0
0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0
1	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0
1	0	0	0	0	1	2	0	2	1	0	2	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	3	0
0	0	0	0	0	0	1	0	10	2	0	2	1	7	8	2	0	8	3
0	0	1	0	0	2	0	0	8	1	1	1	1	3	2	0	0	3	1
0	0	0	0	0	0	0	0	5	2	0	1	0	0	2	2	1	0	0
0	0	0	0	0	0	1	0	9	11	0	5	1	1	5	0	1	9	1
0	0	0	0	0	0	0	0	8	1	0	1	0	1	3	0	1	2	2
0	0	0	0	0	0	0	0	9	1	0	2	1	2	3	0	0	0	1
0	0	0	0	0	0	0	0	0	4	0	0	0	0	3	1	0	4	1
0	0	0	0	0	0	0	0	5	1	0	2	1	1	0	0	0	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(Cont'd):							
Ramapo	*5,000	11	26.40	9.1	91.90	0	0
Rest of district	.....	952	.....	27.0	89.00	0	7
ADIRONDACK AND NORTH'N DIST.:							
Totals	.....	415	.....	27.2	71.00	....	5
Argyle	2,700	4	22.00	....	.....	0	0
Greenwich	*4,000	9	27.00	22.2	.....	0	0
Salem	2,340	6	30.57	16.7	.....	0	0
Fort Ann	4,267	3	14.00	20.0	.....	0	0
Fort Edward	*5,000	11	26.40	....	91.90	0	1
Glens Falls	*10,000	15	18.00	6.7	122.23	0	1
Malone	*9,000	17	23.67	47.0	117.50	0	0
Potsdam	*4,000	7	23.00	....	....	0	0
OGDENSBURG	*12,000	24	24.00	33.3	160.67	0	1
Gouverneur	*3,500	14	30.54	50.0	.....	0	1
Ellisburgh	4,821	9	22.50	11.1	.....	0	0
Plattsburgh	*7,000	2	....	....	.....	0	0
WATERTOWN	*13,200	28	27.54	17.9	71.43	0	1
Cape Vincent	3,143	10	37.50	20.0	.....	0	0
Clayton	4,314	4	11.16	75.0	.....	0	0
Rest of district	.....	250	.....	16.8	32.00	0	2
MOHAWK VALLEY DISTRICT:							
Totals	.....	600	.....	12.3	106.67	4	2
SCHENECTADY	*20,000	36	21.60	11.1	144.00	0	0
Schoharie	2,350	7	25.07	14.3	142.80	0	0
Cobleskill	3,371	6	21.18	....	.....	0	0
AMSTERDAM	*20,000	39	23.40	28.0	150.00	0	0
Johnstown	*6,000	10	20.00	10.0	.....	0	0
Gloversville	*10,000	13	15.60	30.7	.....	0	0
Little Falls	*8,500	31	43.76	13.0	230.40	1	0
Herkimer	*2,000	.....	.....	....	.....	0	0
Ilion	*4,250	8	22.55	12.5	.....	0	0
UTICA	*50,000	106	25.44	24.5	113.30	0	1
Whitestown	*5,000	10	24.00	10.0	....	0	0
ROME	12,045	33	33.00	30.3	424.24	0	0
Boonville	*4,000	8	24.00	....	.....	0	0
Camden	3,400	6	21.18	....	166.67	1	0
Waterford	*5,400	7	15.55	14.3	.....	1	0
Ballston Spa	3,200	11	41.25	....	.....	0	0
Saratoga Springs	*10,000	29	34.80	17.2	69.00	0	0
Rest of district	.....	240	.....	8.3	54.16	1	2
SOUTHERN TIER DISTRICT:							
Totals	.....	383	.....	9.2	84.25	1	3
BINGHAMTON	*20,000	58	23.20	5.2	137.40	0	7
Owego	*6,000	7	14.00	....	.....	0	0
Candor	4,323	5	14.06	....	200.00	0	0
ELMIRA	*25,000	57	27.52	21.0	175.43	0	2
Horseheads	3,500	3	.....	....	.....	0	0
Bath	3,500	2	.....	....	.....	0	0
Corning	*8,000	12	18.00	8.4	.....	0	0
Olean	*8,000	9	13.50	33.3	222.22	1	1
Salamanca	6,000	5	10.00	20.0	.....	0	0
JAMESTOWN	*14,000	18	15.43	16.7	55.55	0	0
Westfield	3,000	6	24.00	....	.....	0	0
Fredonia	*5,000	8	32.00	....	.....	0	0
Rest of district	.....	193	.....	6.1	82.00	0	0

FOR JANUARY—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	2	1
1	0	5	0	3	2	13	2	106	42	4	21	13	27	36	15	6	34	15
...	....	....	....	1	11	12	....	139	52	4	24	13	31	34	11	9	52	17
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	1	1	0	1	0	2	2	0	0	2	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	4	2	0	0	2	0	0	1	0	1	0
0	0	2	0	0	0	2	0	8	2	0	0	1	2	0	0	0	0	0
0	0	0	0	0	0	2	0	4	2	0	1	0	1	3	0	0	4	0
0	0	0	0	0	0	0	0	2	2	1	0	0	1	0	0	0	1	0
0	0	0	0	0	4	0	0	8	4	0	0	0	2	0	0	0	3	3
0	0	0	0	0	3	1	0	2	3	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	4	0	0	0	0	0	2	0	1	2	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	1	0	9	6	0	0	0	2	3	0	1	4	1
0	0	0	0	0	0	0	0	6	0	0	0	0	1	0	1	0	1	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0
0	0	0	0	1	4	6	0	84	28	3	22	9	18	23	9	5	27	9
1	....	1	4	....	1	45	5	174	83	5	26	21	33	81	8	12	63	30
0	0	0	0	0	0	5	0	8	8	0	1	1	1	8	1	1	2	0
0	0	0	0	0	0	1	0	1	2	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	2	0	2	1	0	0	1	1	0	0	0	1	0
0	0	0	0	0	0	6	0	14	7	0	1	0	1	6	0	0	2	2
0	0	0	0	0	0	0	0	2	3	0	1	1	1	1	0	0	1	0
0	0	0	0	0	0	0	0	7	2	0	0	0	0	2	0	0	2	0
0	0	0	4	0	0	3	0	10	3	0	2	0	2	2	0	1	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	1	1
0	0	1	0	0	0	6	4	24	17	2	7	4	4	25	1	2	4	4
0	0	0	0	0	0	1	0	3	2	0	1	0	0	1	0	0	1	1
1	0	0	0	0	0	13	0	8	1	0	1	1	0	3	0	0	2	3
0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	0	0	3	0
0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	1	0	1
0	0	0	0	0	0	0	0	5	2	0	1	0	0	0	0	0	2	1
0	0	0	0	0	1	1	0	13	4	0	0	1	0	1	0	1	5	2
0	0	0	0	0	0	9	1	69	26	3	11	11	20	29	5	6	32	15
...	....	1	....	2	5	13	1	98	35	4	21	14	26	48	15	21	46	23
0	0	0	0	0	1	0	0	20	9	0	1	1	5	6	0	4	4	0
0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	2	2
0	0	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	1
0	0	0	0	0	2	6	1	12	3	0	2	3	4	11	3	5	1	3
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	4	0	0	0	0	2	1	1	1	2	1
0	0	0	0	0	0	0	0	0	1	0	2	0	0	2	0	1	1	0
0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1
0	0	0	0	0	1	0	0	9	4	0	1	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	0	0	3	0	0	0	1	1	0	1	0	2	0
0	0	1	1	1	2	6	0	46	13	3	11	9	12	26	10	9	32	12

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:							
Totals	.....	563	.....	12.5	76.38	1	5
Walton	3,540	6	20.26	16.7	.....	0	0
Delhi	3,000	7	28.00	....	.....	0	0
Cooperstown	*3,000	3	12.00	33.3	.....	0	0
Oneonta	*7,000	17	29.10	23.5	198.00	0	0
Worcester	*3,000	3	12.00	....	.....	0	0
Brookfield	3,685	2	6 45	....	.....	0	0
Norwich	5,500	7	15.26	14.3	142.85	0	0
Hamilton	4,000	10	30 00	....	200.00	1	0
Oneida	*5,000	9	21.70	....	.....	0	0
Baldwinsville	3,000	4	16.00	25.0	.....	0	0
SYRACUSE	*87,000	186	25.65	17.7	86.00	0	0
Cortland	*9,000	15	20.22	7.0	133.33	0	1
Homer	3,000	4	16.00	25.0	.....	0	0
Rest of district	.....	290	.....	12.7	51.70	0	4
WEST CENTRAL DISTRICT:							
Totals	.....	400	.....	16.7	82.50	1	9
AUBURN	*26,000	65	30.00	27.8	184.60	1	1
ITHACA	*10,000	17	20.40	23.5	60.00	0	0
Waterloo	*4,500	9	24.00	33.3	.....	0	0
Seneca Falls	*6,000	12	24.00	27.3	.....	0	0
Manchester	*4,000	8	24.00	25.0	.....	0	0
Phelps	*7,000	7	12.00	....	.....	0	0
Canandaigua	*8,300	11	20.95	36.4	181.81	0	0
Geneva	*6,000	12	24 00	16.7	.....	0	0
Penn Yan	*4,500	8	21.33	....	125.00	0	1
Batavia	*7,000	12	20.57	....	.....	0	1
Dansville	3,700	2	.....	....	....	0	0
Rest of district	.....	237	.....	8.7	62.50	0	6
LAKE ONTARIO AND WEST'N DIST.:							
Totals	.....	1,031	.....	15.6	76.62	3	13
OSWEGO	*24,000	39	19.50	20.5	25.64	0	0
Richland	4,000	8	24.00	12.5	.....	0	0
Clyde	*3,000	6	24 00	....	.....	0	0
Lyons	*6,000	16	31.00	13.3	32.25	0	1
Palmyra	*5,000	11	26.40	27.3	171.71	0	0
ROCHESTER	*130,000	237	21.72	19 4	54.85	0	3
Brockport	4,500	2	....	....	.....	0	0
Medina	4,000	11	30.75	36.3	166.67	0	0
Albion	*5,000	11	26.40	....	.....	0	0
LOCKPORT	*15,000	12	.....	16.7	.....	0	0
Niagara	*7,000	†1	.....	....	.....	0	0
BUFFALO	*230,000	389	21.96	28.4	112.84	3	6
Tonawanda	5,000	9	21.30	33.3	.....	0	0
Amherst	4,578	4	.....	....	.	0	0
Rest of district	.....	275	.....	11.0	54.55	0	3
Totals for the State	.....	12,374	.....	18.2	89.70	28	116
Totals for January, 1889	.....	8,337	.....	35.2	170.32	35	89

NOTE.—For boundaries of Sanitary Districts, see Annual Summary.

REMARKS.—The mortality for January is over sixty per cent, or nearly 5,000 greater than the average year. The increase is not due to ordinary zymotic diseases, the actual number of deaths from which is 340 the average for January. The increase has been due to the remarkable occurrence of epidemic influenza, has shown itself in a large mortality from all local diseases. The number of deaths from acute respiratory latory and digestive systems there is an increase of from thirty-seven to forty per cent. Consumption are nearly doubled. The death rate from the preventable diseases is unusually low, and the mortality demic, which has added not less than 4,000 to the mortality for the month.

FOR JANUARY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
3	....	2	1	1	1	26	3	173	63	9	30	23	42	58	18	16	68	26
0	0	0	0	0	0	0	0	2	0	0	0	0	1	2	0	0	1	0
0	0	0	0	0	0	0	0	4	1	0	0	1	0	0	0	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	5	0	5	0	0	2	1	1	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	1	0	2	0	0	1	1	0	1	1	1	1	0
0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0	0	1	2
0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1
2	0	0	1	1	1	10	3	57	30	7	4	4	21	20	5	6	14	0
1	0	0	0	0	0	0	0	6	1	0	1	0	2	1	0	0	1	1
0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0
0	0	2	0	0	0	9	0	85	26	2	20	15	17	33	9	8	47	13
....	....	5	1	1	4	9	3	89	45	5	24	25	27	47	12	7	55	31
0	0	1	1	1	2	5	0	18	9	1	2	4	1	7	3	1	5	2
0	0	0	0	0	0	1	0	5	2	0	1	0	1	3	0	0	0	4
0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0	2	3
0	0	0	0	0	0	0	0	7	0	0	0	0	1	1	0	0	0	3
0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	3	1	0	2	0	0	0	0	1	0
0	0	0	0	0	1	0	1	3	1	0	0	2	1	0	0	0	1	1
0	0	0	0	0	0	0	0	3	1	0	1	2	0	3	1	0	1	0
0	0	0	0	0	0	0	0	2	0	0	1	1	1	1	0	0	1	0
0	0	0	0	0	0	0	1	4	2	0	0	0	1	2	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	4	0	0	1	3	1	40	26	3	17	14	20	30	8	5	44	15
5	....	8	3	2	7	34	4	284	121	12	73	33	59	125	33	41	89	102
0	0	0	0	1	0	0	0	8	7	0	5	0	6	6	0	1	2	3
0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	2	2
0	0	0	0	0	0	0	0	2	2	1	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	5	1	1	2	2	0	0	0	2	1	1
0	0	0	2	0	0	0	0	1	0	0	0	3	0	1	0	1	2	1
0	0	0	1	0	0	9	0	86	33	3	12	9	14	29	9	9	9	11
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
0	0	0	0	0	3	0	0	1	2	0	0	0	0	2	0	2	1	0
0	0	0	0	0	0	0	0	5	2	0	0	0	1	0	1	1	1	0
0	0	0	0	0	0	0	0	4	2	0	0	0	1	1	1	1	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4	0	6	0	1	2	19	3	93	49	6	20	8	20	51	12	19	0	66
0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	0	4
0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	0
1	0	2	0	0	2	6	1	74	23	1	30	11	15	30	10	4	48	14
60	....	93	42	30	114	516	98	3,847	1,765	95	542	353	724	1,107	277	333	653	1,381
51	15	242	164	29	105	606	101	1,473	1,061	77	421	469	577	946	194	279	507	896

† For four weeks ending January 25.

during the past five years in this month. It is greater by 2,000 than that of July, the most fatal month in the less than in January, 1889. The percentage of deaths under 5 years of age is also less by about one-half than which began in December. Only a few hundred deaths have been certified to from this cause directly. It diseases is about three times greater than the average in January, and from diseases of the nervous, circu- shows an increase of seventy per cent, deaths from old age are increased, and from unclassified causes they record for the month would have been less than the average but for the advent of this uncontrollable epi-

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The [illegible]

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:							
Totals	....	[illegible]	....	[illegible]	[illegible]	13	[illegible]
NEW YORK CITY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BROOKLYN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LONG ISLAND CITY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HUDSON VALLEY DISTRICT:							
Totals	[illegible]	[illegible]	....	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during February, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
24	....	68	36	26	58	348	62	1,111	792	53	242	264	272	508	111	170	136	643
10	0	41	32	19	42	176	58	624	512	31	140	162	163	262	61	129	56	435
12	0	26	2	7	9	139	7	361	194	18	68	78	72	170	34	25	29	169
0	0	0	0	0	0	4	0	0	1	0	1	0	0	1	0	0	0	3
0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	2	1	3
0	0	1	1	0	1	3	0	2	5	1	0	0	2	1	2	1	1	1
0	0	0	0	0	0	0	0	1	2	0	1	0	0	2	0	0	0	0
0	0	0	0	0	0	3	0	7	1	0	1	0	1	6	1	0	2	3
0	0	0	0	0	0	2	0	4	1	0	0	0	1	4	1	0	1	1
0	0	0	0	0	0	1	0	2	1	0	0	0	0	2	0	1	0	0
0	0	0	0	0	0	0	0	2	2	0	2	0	0	0	0	2	1	0
0	0	0	0	0	0	0	0	1	3	0	1	0	1	1	1	1	2	0
0	0	0	0	0	0	1	0	7	4	0	0	3	1	1	0	0	3	1
0	0	0	0	0	0	0	0	2	2	0	1	0	2	0	0	1	1	1
0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	5	0	4	2	0	0	1	0	4	1	0	3	1
0	0	0	0	0	1	3	0	7	6	0	3	0	2	2	1	0	0	6
0	0	0	0	0	0	1	0	1	2	0	0	0	1	1	1	0	0	1
0	0	0	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	5	6	0	2	1	3	5	1	3	0	2
0	0	0	0	0	3	0	0	4	3	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	2	0	3	1	0	0	1	1	3	1	0	1	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	1	1	1	0	1	2	1	2	1	0
0	0	0	0	0	0	1	0	5	1	0	0	1	1	1	0	1	0	1
0	0	0	0	0	0	0	0	1	0	0	2	2	2	0	0	0	2	1
2	0	0	1	0	2	6	2	60	40	2	17	14	16	38	5	2	31	12
5	...	4	....	1	18	55	5	213	113	4	59	41	83	118	26	20	90	42
1	0	0	0	0	7	18	3	46	25	1	12	6	34	24	6	6	7	2
0	0	0	0	0	5	3	0	7	4	0	3	2	3	4	2	1	2	2
0	0	1	0	0	2	5	0	38	19	0	10	8	2	11	4	1	13	8
0	0	0	0	0	0	1	0	5	1	0	3	1	1	3	2	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
0	0	0	0	0	0	1	1	1	1	0	2	0	0	4	2	0	2	1
0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	1	1
0	0	1	0	0	0	0	0	2	1	0	2	0	2	1	0	0	1	0
0	0	0	0	0	0	2	0	1	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	1	0	1	1	0	0	0	2	2	0	0	0	0
0	0	0	0	0	1	2	0	6	1	0	0	1	2	2	0	1	2	1
0	0	1	0	0	0	8	0	8	4	0	0	1	0	2	0	0	3	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	1	0	2	2	0	0	0	1	3	0	0	0	0
0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	6	6	1	2	1	0	7	2	0	5	4
0	0	0	0	0	1	0	0	0	2	0	2	2	0	2	0	1	1	3
1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	2	0	0	0
0	0	0	0	0	0	2	0	4	12	0	1	0	5	8	0	0	1	2
0	0	1	0	0	0	1	0	0	0	0	1	3	0	0	0	0	1	2
0	0	0	0	0	0	1	0	5	0	0	2	0	1	6	1	0	4	0
0	0	0	0	0	0	0	0	3	2	0	0	0	2	0	0	2	2	0

	Population.	Total number of deaths.	Representing annual death rate per 1 000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VALLEY DIST.—(*Cont'd*):							
Nyack	*5,000	1	.....	....	.....	0	0
Ramapo	*5,000	9	21.60	33.3	.....	0	0
Rest of district	.....	276	.....	13.0	61.50	1	1
ADIRONDACK AND NORTH'N DIST.:							
Totals	.....	354	.....	17.0	62.50	3	....
Argyle	3,700	4	13.00	....	.....	0	0
Greenwich	*4,000	1	.....	....	.....	0	0
Salem	3,500	6	20.58	...	.....	0	0
Fort Ann	4,267	2	.....	....	.....	0	0
Fort Edward	*5,000	5	12.00	....	.....	0	0
Glens Falls	*10,000	14	16.80	35.7	142.85	0	0
Malone	*9,000	10	13.33	10.0	200.00	0	0
Potsdam	*4,000	10	30.00	40.0	.....	0	0
OGDENSBURG	*12,000	14	14.00	50.0	71.43	0	0
Gouverneur	*5,500	10	21.82	20.0	200.00	1	0
Ellisburgh	4,811	13	32.50	7.7	.....	0	0
Plattsburgh	*7,000	9	15.43	33.3	.....	0	0
WATERTOWN	*12,200	14	13.77	14.3	71.50	0	0
Cape Vincent	3,143	1	.....	....	.....	0	0
Clayton	4,314	4	11.16	25.0	.....	0	0
Rest of district	.....	237	.....	13.6	58.80	2	0
MOHAWK VALLEY DISTRICT:							
Totals	.....	454	.....	17.8	108.80	2	6
SCHENECTADY	*20,000	35	21.00	25.7	200.00	0	2
Schoharie	3,350	1	.....	....	.....	0	0
Cobleskill	3,271	2	.....	....	.....	0	0
AMSTERDAM	*20,000	27	16.20	25.9	.....	0	0
Johnstown	*6,000	7	14.00	14.3	.....	0	0
Gloversville	*10,000	12	14.40	33.3	83.33	0	0
Little Falls	*8,500	11	15.53	9.1	272.73	0	1
Herkimer	*3,000	6	24 00	....	166.67	0	0
UTICA	*50,000	69	18.63	30.0	101.00	0	0
Whitestown	*5,000	7	16.80	14.3	285.71	0	0
ROME	12,045	34	34.00	14.7	382.34	1	2
Boonville	*4,000	5	15.00	....	.....	0	0
Camden	3,400	5	17.65	40.0	600.00	0	0
Waterford	*5,400	10	22.22	30.0	100.00	0	0
Ballston Spa	3,200	6	22.50	....	.....	0	0
Saratoga Springs	*10,000	27	32.40	11.1	74.06	0	1
Rest of district	.....	190	.....	12.6	47.35	1	0
SOUTHERN TIER DISTRICT:							
Totals	.....	316	.....	11.1	142.40	2	11
BINGHAMTON	*30,000	37	14.80	2.7	180.90	0	4
Owego	*6,000	1	.....	100.0	.....	0	0
Candor	4,323	8	21.22	25.0	.....	0	0
Waverly	*5,000	7	16.80	28.5	.....	0	0
ELMIRA	*25,000	38	18.24	26.3	342.10	0	3
Horseheads	3,500	6	20.57	50.0	166.67	0	0
Bath	3,500	4	13.70	....	.....	0	0
Corning	*8,000	9	13.50	33.3	333.33	0	0
Olean	*8,000	8	12.00	25.0	125.00	0	1
Salamanca	6,000	4	8.00	25.0	.....	0	0
JAMESTOWN	*14,000	14	12.00	....	357 10	2	1
Westfield	3,000	7	28.00	....	142.85	0	0
Fredonia	*3,000	2	8.00	....	.....	0	0
Rest of district	.....	171	.....	5.7	81.83	0	2

FOR FEBRUARY — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	3	2	0	0	1	0	2	0	0	0	1
3	0	0	0	1	2	8	1	76	26	2	17	13	26	36	5	7	45	12
...	...	...	1	1	2	13	2	102	42	4	27	13	20	34	6	8	47	29
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	2	0	2	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	1	1
0	0	0	0	0	0	2	0	3	2	0	1	0	0	3	0	1	1	1
0	0	0	0	0	0	2	0	3	1	0	0	1	1	0	0	0	1	1
0	0	0	0	0	0	0	0	3	2	0	2	0	0	2	0	0	0	1
0	0	0	0	0	1	0	0	6	0	1	0	0	2	0	0	1	0	3
0	0	0	0	0	0	0	0	1	0	0	0	3	0	2	1	0	0	1
0	0	0	0	0	0	0	0	5	0	0	1	0	1	0	0	0	5	1
0	0	0	0	0	0	0	0	1	1	1	0	0	1	2	0	0	1	2
0	0	0	0	0	1	0	0	2	3	0	0	0	0	3	0	1	1	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	1	0
0	0	7	...	...	1	26	6	112	63	3	27	20	30	50	12	15	49	24
0	0	0	0	0	0	3	2	8	5	0	2	1	1	5	1	2	0	3
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	11	0	1	5	1	4	0	0	2	1
0	0	0	0	0	0	0	0	3	1	0	0	0	0	1	1	0	1	0
0	0	0	0	0	0	1	0	2	3	0	0	0	2	1	1	0	0	2
0	0	0	0	0	0	2	0	1	2	0	0	0	2	1	0	1	1	0
0	0	0	0	0	1	0	0	1	0	0	1	2	0	0	0	0	0	1
0	0	1	0	0	0	8	0	20	7	1	2	2	7	8	2	4	6	3
0	0	0	0	0	0	1	1	1	1	0	0	2	0	0	0	0	1	0
0	0	0	0	0	0	10	0	6	5	0	2	0	1	5	0	0	0	2
0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	1	0
0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	1	2	2	0	0	1	0	0	0	1	0	2
0	0	0	0	0	0	0	0	2	0	1	1	0	0	0	0	1	1	0
1	0	0	0	0	0	0	0	8	5	0	1	0	2	6	2	1	0	0
0	0	3	0	0	0	3	2	51	20	1	17	7	12	18	4	5	36	10
2	...	3	1	1	6	16	3	67	36	2	19	9	26	35	13	8	44	12
1	0	0	0	0	1	1	0	8	7	0	3	0	1	4	1	0	6	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	1	2	1	0	0	1	0
0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	1	0
0	0	1	0	0	2	6	1	5	1	0	3	2	1	9	2	0	0	2
0	0	0	0	0	1	0	0	2	0	0	0	0	1	1	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1
1	0	0	0	0	0	2	0	1	1	0	0	0	0	1	1	1	0	1
0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1
0	0	0	0	0	0	1	1	1	5	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	1	0	2	0	0	0	0	0	1	0	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	2	1	1	2	5	1	34	22	2	12	4	21	15	6	6	30	5

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:							
Totals	.....	422		11.0	50.00	1	2
Walton	3,540	7	23.67	....	.....	0	0
Delhi	3,000	1	.....	....	.....	0	0
Cooperstown	*3,000	1	4.00	....	.....	0	0
Oneonta	*7,000	5	8.57	....	.....	0	0
Worcester	*3,000	5	20.00	40.0	.....	0	0
Cazenovia	4,363	3	8.26	....	.....	0	0
Brookfield	3,685	11	35.67	....	.....	0	0
Norwich	5,500	6	13.10		.....	0	0
Hamilton	4,000	7	21.00	14.3	.....	0	0
Oneida	*5,000	7	16.80	14.3	142.85	0	0
Baldwinsville	3,000	2	8.00	....	.....	0	0
SYRACUSE	*87,000	113	15.58	22.1	115.04	0	1
Cortland	*9 000	6	.....	16.7	.....	0	0
Homer	3,000	8	32.00	12.5	125.00	0	0
Rest of district	.....	230	.....	10.8	26.10	1	1
WEST CENTRAL DISTRICT:							
Totals	.....	321	.....	14.0	60.00	1	2
AUBURN	*26,000	52	24.00	21.2	80.00	0	0
Ithaca	*10,000	9	.....	25.0	250.00	0	1
Waterloo	*4,500	4	10.66	25.0	.....	0	0
Seneca Falls	*6,000	8	16.00	50.0	.....	0	0
Manchester	*4,000	8	24.00	12.5	125.00	0	1
Phelps	*7,000	12	20.57	16.6	83.33	0	0
Canandaigua	*6,300	5	.....	20.0	.....	0	0
Geneva	*6,000	11	22.00	....	90.90	0	0
Penn Yan	*4,500	1	.....	...	.....	0	0
Batavia	*7,000	7	12.00	42 8	571.43	0	0
LeRoy	*5,000	4	9.60	25.0	.....	0	0
Rest of district	.....	207	.....	10 0	25.00	1	0
LAKE ONTARIO AND WEST'N DIST.:							
Totals	.....	831	.....	25.0	102.40	8	13
OSWEGO	*24,000	21	10.50	9.5	148.24	0	2
Richland	4,000	4	12 00	....	. ...	0	1
Clyde	*3,000	2	8.00	....	.....	0	0
Lyons	*6,000	10	20 00	40 0	200.00	0	0
Newark	3,500	8	27.43	...	.....	0	0
Palmyra	*5,000	8	19.20	12.5	.....	0	0
ROCHESTER	*130,000	162	15.00	29.0	80.25	0	2
Brockport	4,500	6	16.00	33.3	166.66	0	0
Medina	4,000	9	27.00	....	.....	0	0
Albion	*5,000	9	21.60	....	.....	0	0
LOCKPORT	*15,000	6		...		0	0
NIAGARA	*7,000	15	25.71	20.0	200 00	0	2
BUFFALO	*230,000	†349	19 70	36.1	111.76	6	2
Tonawanda	5,000	8	19.20	50.0	500.00	0	2
Amherst	4,578	4	10.48	50.0	.....	0	0
Rest of district	.....	210	.....	9.5	95.00	2	2
Totals for the State	.....	8,578	.....	27.5	118.80	86	84
Average for Feb. for past five years.	.....	7,273	.....	34.2	152.27	39	64

NOTE.—For boundaries of Sanitary Districts, see Annual Summary.

REMARKS.—The mortality for February is about 1,000 in excess of the average for that month for the past January) is far below the average, there being about fifty less deaths from these causes per 1,000 deaths the average deaths from other zymotic diseases vary but little from the average. Deaths from all local influenza. The number of deaths reported as directly due to this disease is small, but it is frequently more deaths from acute respiratory diseases, 300 from consumption and seventy-five from digestive annually, that of last month being 29.05, and of February, 1889, 21.32.

FOR FEBRUARY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
....	....	5	....	....	....	10	3	100	60	5	23	20	32	32	11	12	65	31
0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	6	1	0	2	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	2	0	2	1	0	0	0
0	0	0	0	0	0	1	0	3	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
0	0	3	0	0	0	7	2	10	18	1	5	8	10	8	4	4	12	11
0	0	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0	0	1
0	0	0	0	0	0	0	1	1	2	0	0	0	0	1	1	0	2	0
0	0	2	0	0	0	2	0	63	28	3	11	10	21	17	5	8	44	14
....	....	2	1	1	2	9	....	82	44	....	25	17	33	38	11	8	29	16
0	0	2	0	0	0	2	0	10	10	0	2	2	2	10	4	2	2	4
0	0	0	0	0	0	1	0	3	2	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0
0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	1	0	0	2
0	0	0	0	0	0	0	0	0	2	0	2	0	1	1	0	0	1	0
0	0	0	1	0	0	0	0	2	0	0	2	2	2	1	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	0	0	0
0	0	0	0	1	0	0	0	1	3	0	0	1	1	2	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	1	0	0
0	0	0	0	0	2	2	0	62	22	0	17	12	25	18	6	3	21	9
6	....	7	11	2	5	32	1	163	105	3	55	31	60	112	19	23	55	120
1	0	0	0	0	0	0	0	4	2	0	2	1	2	2	1	1	1	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	1	0	0	1	0	1	1	1	3	0	0	1	0
0	0	0	0	0	0	0	0	0	2	0	0	1	1	1	0	1	1	1
0	0	0	0	0	0	0	0	4	1	0	0	0	1	1	0	0	1	0
0	0	0	7	0	0	5	0	30	28	1	13	6	11	28	4	3	13	11
0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	1	1
0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	0	1	1	0
0	0	0	0	0	0	0	0	1	2	0	0	1	1	0	0	1	2	1
0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	0	0	0	1
0	0	0	0	0	0	1	0	4	2	0	0	0	0	1	0	2	2	1
4	0	4	0	0	1	20	1	63	41	0	19	11	20	54	7	9	0	37
0	0	2	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1
1	0	1	4	1	3	5	0	47	19	1	17	9	22	21	7	5	30	13
38	....	96	50	32	92	509	82	1,950	1,255	74	477	415	556	927	209	264	515	917
52	9	177	118	36	73	500	81	1,350	997	18	362	387	489	777	166	221	622	674

† For four weeks ending February 22.

five years, and about 400 greater than that of February, 1889. The proportion of zymotic diseases (as in than a year ago. Scarlet fever and measles were then much more prevalent, these diseases being now below diseases continue, as in January, much above the average, from the continued prevalence of epidemic certified to as contributory, and chiefly to diseases of the respiratory and digestive organs. There are 500 diseases, than in February, 1889. The death rate of 134 cities and large villages is 21.24 per 1,000 population

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:							
Totals	.....	5,437	.....	34.8	126.00	17	25
NEW YORK CITY	*1,622,000	3,339	24.24	36.0	131.44	13	13
BROOKLYN	*852,467	1,513	20.88	37.4	136.80	0	7
Gravesend	*5,000	11	26.40	36.4	181.81	0	0
New Utrecht	*5,000	16	38.40	31.2	.....	0	0
LONG ISLAND CITY	*40,000	22	.....	....	.....	0	0
Flatbush	*8,000	13	19 50	....	.....	0	0
Newtown	*10,000	44	52.80	45.5	318.20	0	0
Oyster Bay	*12,000	3	.....	...	.....	0	0
Hempstead	18,160	33	21.75	24.2	30.30	0	0
North Hempstead	8,000	17	25.25	24.0	.....	0	0
Huntington	8,100	12	17.90	16.7	.....	0	0
Jamaica	10,089	28	27.42	26.0	86.92	0	0
Southold	7,267	5	...	20.0	.....	0	0
Sag Harbor	*3,000	4	16.00	25.0	.....	0	0
New Brighton	*15,000	30	24.00	23.3	33.33	0	0
Port Richmond	3,600	10	33.33	30.0	100.00	0	0
Westfield	7,000	12	21.57	16.7	.....	0	0
YONKERS	*31,000	31	12.00	25.8	32.25	0	0
Westchester	*7,000	8	12.00	42.8	428.57	0	1
Mount Vernon	*11,003	19	20.72	21.0	52.60	0	0
Sing Sing	*6,500	11	20.31	35.4	90.91	0	0
New Rochelle	*6,000	12	24.00	25.0	88.33	0	0
Peekskill	*7,000	10	17.14	20.0	100.00	0	0
Rest of district	.....	240	.....	20.0	83.33	4	4
HUDSON VALLEY DISTRICT:							
Totals	.....	983	.....	22.6	101.20	6	16
ALBANY	*103,000	203	23.66	24.9	130.00	1	4
COHOES	*20,000	43	25.80	41.8	139.00	0	1
TROY	*65,000	131	24.18	28.6	70.00	1	2
West Troy	*13,000	25	23.07	28.0	120.00	0	1
Hoosick Falls	*6,000	9	18.00	....	.....	0	0
Lansingburgh	*10,000	18	21.60	16.7	111.11	0	0
Greenbush	*8,000	9	13.50	33.3	.....	0	0
Coxsackie	4,000	5	15.00	60.0	400.00	0	0
Catskill	*4,500	10	26.66	30.0	300.00	0	0
HUDSON	*13,000	16	14.77	25.0	250.00	0	0
KINGSTON	*21,000	45	25.71	33.3	177.77	0	0
Ellenville	3,000	1	.....	....	.....	0	0
Marbletown	4,000	8	24.00	25.0	....	0	0
Esopus	4,736	4	10.00	....	250.00	0	0
Saugerties	*4,000	8	24 00	25.0	.....	0	0
POUGHKEEPSIE	*20,200	39	23.16	28.2	.....	0	0
Fishkill	10,732	11	13.00	36.4	90.91	0	0
Wappinger Falls	*5,000	9	21.60	11.1	111.11	0	0
NEWBURGH	*20,000	34	20.40	11.7	29.40	0	0
Middletown	*10,000	19	22.80	21.1	.....	0	0
Goshen	4,500	12	32.00	8.3	166.67	1	0
Haverstraw	*7,000	14	24.00	57.1	142.85	0	1
Nyack	*5,000	6	14.40	....	.....	0	0
Ramapo	*5,000	2	.....	....	.....	0	0
Rest of district	.....	302	.....	....	.....	3	7

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during March, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
16	2	72	58	36	55	357	59	1,179	744	61	257	328	369	606	128	1791	49	740
9	2	58	50	24	36	188	46	716	475	40	148	219	209	306	80	135	57	515
4	0	11	5	10	17	143	10	354	182	15	77	77	101	220	33	34	41	172
0	0	0	0	0	0	2	0	1	1	0	0	0	1	5	1	0	0	0
0	0	0	0	0	0	0	0	8	1	0	1	1	0	1	0	0	3	1
0	0	0	0	0	0	0	0	1	3	0	1	2	3	2	1	4	1	4
1	0	0	0	0	0	1	0	5	0	0	1	3	2	0	0	0	0	0
1	0	0	0	0	0	13	0	6	2	2	2	1	2	4	0	0	1	10
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
0	0	1	0	0	0	0	0	6	5	0	3	4	0	2	0	1	5	6
0	0	0	0	0	0	0	0	2	3	0	1	1	1	5	2	0	1	1
0	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	4	2	0
0	0	1	0	0	0	1	0	5	5	0	2	3	0	2	3	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	1	0	5	3	0	4	2	7	4	2	0	2	3
0	0	0	0	0	0	1	0	4	0	1	1	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	5	1	0	1	2	2	1	0	0	0
0	0	0	0	0	0	1	0	10	5	0	2	1	4	7	0	0	1	0
0	0	1	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	1	4	2	0	0	2	1	7	0	0	2	0
0	0	0	0	1	0	0	0	3	1	0	0	0	3	1	0	0	1	1
0	0	0	0	0	0	1	0	1	2	1	1	0	1	1	0	0	2	2
0	0	0	0	0	0	1	0	1	1	0	2	0	1	0	0	0	3	1
1	0	0	3	1	1	4	2	43	46	1	13	9	31	32	4	1	22	18
9	....	3	....	3	21	31	10	196	143	15	63	49	86	115	23	31	74	89
1	0	0	0	0	10	8	2	41	32	3	12	13	17	21	5	6	10	17
0	0	0	0	0	2	3	0	5	6	0	6	0	3	8	0	1	2	6
0	0	0	0	0	3	3	0	34	23	5	5	3	6	12	3	4	6	21
0	0	0	0	0	0	1	1	7	1	0	3	2	1	4	0	1	0	3
0	0	0	0	0	0	0	0	3	2	1	0	0	0	0	0	0	1	2
0	0	0	0	1	0	0	1	2	5	0	1	0	3	2	0	1	1	1
0	0	0	0	0	0	0	0	4	0	0	2	0	3	0	0	0	0	0
0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	3	2	0	0	0	4	1	0	0	0	0
0	0	1	0	0	0	2	1	2	3	0	1	1	0	3	1	0	0	1
1	0	0	0	0	0	5	2	6	7	1	5	1	5	5	1	0	6	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	2	0	1	0	1	1	0	0	0	2
0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	2	3	0	0	0	0	2	0	0	1	0
0	0	0	0	0	0	0	0	5	4	0	3	2	2	8	1	1	3	10
1	0	0	0	0	0	0	0	1	1	1	1	0	1	3	0	1	0	1
1	0	0	0	0	0	0	0	2	3	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	1	0	9	8	0	1	1	1	5	0	1	3	4
1	0	1	0	0	0	0	0	4	1	0	2	1	1	3	0	1	1	3
1	0	0	0	0	0	0	0	0	5	0	0	0	0	1	1	1	2	0
0	0	0	0	0	0	1	0	3	2	0	0	2	0	3	0	0	0	2
0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
3	0	1	0	2	4	6	0	60	34	4	19	79	37	31	9	11	37	12

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
ADIRONDACK AND NORTHERN DISTRICT:							
Totals	.....	340	.....	21.2	132.35	2	3
Argyle	3,700	4	13.00	....	.....	0	0
Greenwich	*4,000	4	12.00	....	.....	0	0
Salem	3,500	6	20.57	....	.....	0	0
Fort Ann	4,267	7	19.53	28.5	.....	0	0
Fort Edward	*5,000	1	.....	....	.....	0	0
Glens Falls	*10,000	13	15.60	23.0	153.50	0	0
Malone	*9,000	9	12.00	33.3	.....	0	0
Potsdam	*4,000	5	15.00	60.0	.....	0	0
OGDENSBURG	*12,000	20	20.00	45.0	350 00	1	0
Gouverneur	*5,500	6	13.10	33.3	166.67	0	1
Ellisburgh	4,811	11	27.50	9 0	90.91	0	0
Plattsburgh	*7,000	10	17.14	60.0	200.00	0	0
WATERTOWN	*12,200	15	15.00	26.7	133.33	0	0
Cape Vincent	3,143	8	30.00	25.0	125.00	0	0
Clayton	4,314	5	14.00	20.0	.....	0	0
Rest of district	.....	216	.....	....	.....	1	2
MOHAWK VALLEY DISTRICT:							
Totals	.....	422	.....	26.0	116.60	3	4
SCHENECTADY	*20,000	35	21.00	45.7	228.57	1	1
Schoharie	3,350	3	10.72	....	.....	0	0
AMSTERDAM	*20,000	18	10.80	22.2	.....	0	0
Johnstown	*6,000	6	12.00		.....	0	0
Gloversville	*10,000	17	20.40	17.6	58.66	0	0
Little Falls	*8,500	4	.....	25.0	250.00	0	0
Herkimer	*3,000	4	16.00	....	250.00	1	0
Ilion	*4,200	3	8.57	....		0	0
UTICA	*50,000	86	20.64	34.9	70.00	0	0
Whitestown	*5,000	7	16.80	14.2	.....	0	0
ROME	12,045	24	24.00	16.7	375.00	1	0
Boonville	*4,000	4	12.00	25.0	....	0	0
Camden	3,400	6	21.18	50.0	500.00	0	0
Waterford	*5,400	17	37.78	52.8	117.50	0	1
Ballston Spa	3,200	9	33.75	11.1	111.11	0	0
Saratoga Springs	*10,000	20	24.00	30 0	50.00	0	0
Rest of district	.....	159	.....	....	.....	0	2
SOUTHERN TIER DISTRICT:							
Totals	.....	362	.....	17.8	65 00	4	3
BINGHAMTON	*30,000	43	17.20	30.2	69.20	0	0
Owego	*6,000	11	22.00	....	90.91	0	1
Candor	4,323	7	19.43	28.5	285.71	0	0
Waverly	*5,000	5	12.00	....	.....	0	0
ELMIRA	*25,000	41	19.68	19.5	97.55	0	0
Horseheads	3,500	1	.....		.....	0	0
HORNELLSVILLE	*10,000	14	16.80	14.3	.....	0	0
Bath	3,500	4	13.71	25.0	.....	0	0
Corning	*8,000	9	13.50	22 2	111.11	0	0
Olean	*8,000	14	21.00	20.4	71.43	0	0
Salamanca	6,000	4	8.00	25.0	250.00	0	0
JAMESTOWN	*14,000	18	15.43	11.1	55.55	0	0
Westfield	3,000	6	24.00	33.3	333.33	0	0
Fredonia	*3,000	3	12.00	33.3	.....	0	0
Rest of district	.....	182	.....	....	.....	4	2

FOR MARCH — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
....	....	....	7	1	9	20	3	61	33	1	22	7	32	42	12	8	43	34
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	2	1	0
0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	3	4	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	1	1	0	3	0	0	1	0	1	2	1	0	2	1
0	0	0	0	0	0	0	0	3	0	0	1	0	1	1	1	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	2
0	0	0	0	0	4	1	1	0	2	1	4	0	0	0	1	1	2	2
0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	2	2	1
0	0	0	0	0	0	2	0	0	1	0	1	0	1	2	0	0	1	2
0	0	0	0	1	0	1	0	3	1	0	0	0	1	1	2	0	2	3
0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	0	0	3	1
0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	0	0
0	0	0	7	0	3	14	2	41	25	0	11	6	24	29	6	3	23	19
0	0	4	0	2	1	29	6	75	47	2	33	15	33	66	15	14	35	38
0	0	0	0	0	0	3	3	9	3	0	2	1	3	7	0	0	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	2	4	0	0	1	0	5	0	1	2	3
0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	0	1	1	0
0	0	0	0	1	0	0	0	3	3	0	0	1	2	2	1	1	0	3
0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
0	0	1	0	0	0	4	1	15	12	1	10	3	9	15	2	4	4	5
0	0	0	0	0	0	0	0	3	1	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	6	2	0	2	0	2	0	2	5	1	0	0	3
0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0
0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	1	2	0	3	1	0	4	1	1	0	2
0	0	0	0	0	1	0	0	1	3	0	0	0	0	1	0	0	2	1
0	0	0	0	0	0	1	0	6	3	0	2	1	1	2	3	0	1	0
0	0	0	0	1	0	13	0	31	12	1	10	7	12	20	7	7	21	15
1	0	0	0	0	5	17	3	80	35	6	23	8	29	43	9	25	49	22
0	0	0	0	0	2	0	1	8	8	2	3	0	6	3	1	6	3	0
0	0	0	0	0	0	0	0	5	0	0	0	0	0	1	0	1	3	0
0	0	0	0	0	0	2	0	1	0	0	0	0	0	1	1	0	1	1
0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	2	2	0	8	6	1	3	2	2	4	2	3	2	4
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	0	1	1	1	0	4	3	1
0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	2	1	0	2	0	1	1	0	0	0	1
0	0	0	0	0	0	1	0	2	4	1	0	0	2	0	0	2	2	0
1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0
0	0	0	0	0	0	0	1	3	0	0	1	0	1	5	0	1	1	1
0	0	0	0	0	0	2	0	0	0	0	0	1	1	1	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	1	9	1	42	9	2	11	4	15	26	2	8	33	13

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:							
Totals	.....	442	.....	15.7	61.35	1	2
Walton	3,540	9	30.00	....	.....	0	0
Delhi	3,000	5	20.00	....	.....	0	0
Cooperstown	*3,000	3	12.00	....	.....	0	0
Oneonta	*7,000	17	29.14	17.7	59.00	0	0
Worcester	*3,000	2	8.00	....	.....	0	0
Cazenovia	4,363	6	16.37	16.7	.....	0	0
Brookfield	3,685	5	16.22	....	200.00	1	0
Norwich	5,500	9	19.62	11.1	.....	0	0
Hamilton	4,000	6	18.00	16.7	166.67	0	0
Oneida	*5,900	5	12.00	20.0	.....	0	0
Baldwinsville	3,000	4	16.00	....	.....	0	0
SYRACUSE	*87,000	137	18.90	27.0	94.75	0	1
Cortland	*9,000	10	13.33	40.0	100.00	0	0
Homer	3,000	2	8.00	50.0	500.00	0	0
Rest of district	.....	222	.....	....	.....	0	1
WEST CENTRAL DISTRICT:							
Totals	.....	342	.....	18.6	132.97	4	4
AUBURN	*26,000	65	30.00	46.1	353.84	2	2
Ithaca	*10,000	10	12.00	20.0	200.00	0	1
Seneca Falls	*6,000	12	24.00	16.7	83.33	0	0
Manchester	*4,000	8	24.00	12.5	.....	0	0
Phelps	*7,000	11	18.85	9.1	.....	0	0
Canandaigua	*6,300	9	17.14	....	222.23	0	0
Geneva	*6,000	11	22.00	18.2	90.91	1	0
Penn Yan	*4,500	10	26.67	20.0	.....	0	0
Batavia	*7,000	8	13.71	37.5	375.00	0	0
Rest of district	.....	198	.....	....	.....	1	1
LAKE ONTARIO AND WEST. DIST.:							
Totals	.....	934	.....	27.8	98.50	9	10
OSWEGO	*24,000	28	14.00	25.0	35.71	0	1
Richland	4,000	2	6.00	....	.....	0	0
Clyde	*3,000	5	20.00	....	.....	0	0
Lyons	*6,000	12	24.00	....	166.67	0	0
Newark	3,500	6	20.57	....	.....	0	0
Palmyra	*5,000	4	9.60	....	.....	0	0
ROCHESTER	*130,000	192	17.72	30.0	96.60	0	3
Brockport	4,500	3	8.00	....	.....	0	0
Medina	4,000	7	21.00	28.5	142.85	0	0
Albion	*5,000	7	16.80	14.3	142.85	0	0
LOCKPORT	*15,000	9	.....	11.1	.....	0	0
Niagara	*7,000	3	.....	33.3	.....	0	0
BUFFALO	*230,000	†417	18.81	38.8	114.35	8	0
Tonawanda	5,000	13	31.10	15.4	308.00	1	3
Amherst	4,578	6	15.65	....	.....	0	0
Rest of district	.....	211	.....	....	.....	0	3
Totals for the State	.....	9,262	.....	30.0	117.35	46	67
Average for March for past five years	.....	8,468	.....	33.0	162.12	47	70

† For five weeks

REMARKS.—In comparison with the reported mortality of previous corresponding months, that of than it was in January and February. The average daily death rate was 29.9 in March, 30.8 in February and January and February, due to epidemic influenza, has to a large degree subsided; there have been still a tality from acute respiratory diseases also continues above the average, which is about nineteen per cent of there were in each 1,000 deaths, 128.13; the average of other years in March, has been 125.50. A similar among unclassified diseases. A considerable proportion of deaths ascribed to influenza have occurred evident that the results of the disease have shown themselves mainly on those from various causes weakly as prevalent in numerous localities and its death rate is increasing. Small-pox, from which the State has one house; its origin has not been satisfactorily determined; one case, originating in Cohoes, has developed

FOR MARCH — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	0	4	4	0	4	10	0	102	51	1	22	13	57	32	13	15	47	62
0	0	0	0	0	0	0	0	6	0	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	1	0	4	4	0	0	0	0	2	1	1	1	3
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	3	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	2	0	0	1	0	1	0	2	0	0	1
1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	1	1
0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0
1	0	2	3	0	2	4	0	30	18	0	1	4	15	3	4	7	0	42
0	0	1	0	0	0	0	0	3	0	0	2	0	3	1	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	1	1	0	1	5	0	47	24	1	15	8	36	23	4	5	36	14
2	....	3	13	4	8	7	....	59	27	3	23	17	31	36	13	10	56	22
0	0	2	10	0	5	2	0	17	5	0	4	4	2	5	0	2	1	2
1	0	0	0	0	0	0	0	2	2	0	1	0	1	0	1	0	0	1
0	0	0	0	1	0	0	0	1	1	0	0	1	2	1	1	1	1	2
0	0	0	0	0	0	0	0	1	0	0	1	1	2	5	0	0	3	0
0	0	0	0	0	0	0	0	1	1	0	0	1	0	2	0	0	4	2
1	0	0	1	0	0	0	0	2	0	0	3	0	0	0	1	0	1	0
0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	2	0	3	1
0	0	0	0	0	0	0	0	2	2	0	0	1	0	0	1	0	3	1
0	0	0	0	0	0	3	0	1	0	0	0	1	1	0	0	0	2	0
0	0	1	2	3	3	2	0	32	16	2	14	8	21	27	7	7	38	13
5	....	2	12	1	7	34	12	177	115	10	68	34	72	111	22	32	67	134
0	0	0	0	0	0	0	0	4	2	0	3	1	3	9	0	2	2	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	1	0
2	0	0	0	0	0	0	0	2	1	0	1	0	1	0	0	3	2	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	0	0	0	0
0	0	0	3	0	0	11	2	50	31	1	10	2	15	21	4	7	11	21
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
0	0	0	0	0	1	0	0	0	0	0	2	1	0	1	0	0	2	0
0	0	1	0	0	0	0	0	1	0	0	2	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	0	4
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1
1	0	1	2	1	3	22	10	71	46	4	34	14	31	57	12	16	0	84
0	0	0	0	0	0	0	0	2	1	0	0	1	3	0	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1
2	0	0	7	0	3	1	0	44	29	3	13	13	15	18	4	0	43	13
35	2	88	94	47	110	505	93	1,929	1,195	29	511	471	709	1,051	235	314	520	1,141
61	13	195	112	46	90	521	207	1,610	1,058	115	400	415	550	896	197	244	723	847

ending March 29.
March exceeds the average of the same month for five years by 844, the difference being much less marked 398 in January. While it is thus evident that the extraordinary increase in the mortality of the State in considerable number of deaths certified to as due directly or indirectly to so-called "Grippe." The mor- the total mortality for March, that of the present month being twenty-one per cent. From consumption increase is shown in the proportion of deaths from diseases of the digestive and nervous systems and also among those of advanced age; the proportion of deaths from old age is, however, below the average. It is and in a fatal termination a number of weeks sequent to its occurrence in acute form. Measles is reported been free for months, developed in Cohoes about March first, and twelve cases have occurred, all limited to in Schenectady. Two deaths are also reported from it by New York city.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	5,133	.....	1,987	39 0	134.50	16	19
NEW YORK CITY	*1,622,000	3,230	24.84	1,310	40.5	146.14	13	12
BROOKLYN	*852,467	1,426	20.35	585	41.1	135.35	0	7
Gravesend	*5,000	7	16.80	1	14.3	143.00	0	0
New Utrecht	*5,000	7	16.80	3	42.8	142.85	0	0
LONG ISLAND CITY	*40,000	36	.....	16	44.4	83.33	0	0
Flatbush	*8,000	13	19.00	0	....	.....	0	0
Newtown	*10,000	26	31.20	10	38.4	72.30	0	0
Oyster Bay	*12,000	21	21.00	4	19.0	142.85	1	0
Hempstead	18,160	2	....	0	....	.....	0	0
North Hempstead	8,000	9	13.50	3	33.3	.....	0	0
Huntington	8,100	7	10.50	1	14.3	.....	0	0
Jamaica	10,089	12	14.40	4	33.3	250.00	0	0
Flushing	16,000	22	16.50	4	18.2	91.90	0	0
Southold	7,267	10	16.44	0	....	400.00	0	0
Sag Harbor	*3,000	3	12.00	0	....	.....	0	0
New Brighton	*15,000	23	18.40	5	21.7	43.46	0	0
Port Richmond	3,600	6	20.00	4	66.7	166.67	0	0
Westfield	7,000	3	.....	1	33.3	.....	0	0
YONKERS	*31,000	40	15.50	8	20 0	25.00	0	0
Westchester	*7,000	6	10.30	3	50.0	166.67	0	0
Mount Vernon	*11,000	9	.....	6	66.6	222.22	0	0
Portchester	*4,000	5	15.00	0	....	.....	0	0
Sing Sing	*6,500	9	17.00	3	33.3	.....	0	0
New Rochelle	*6,000	15	30 00	2	13.3	.....	0	0
Peekskill	*7,000	11	18.85	0	....	.....	0	0
Rest of district	.....	214	.....	22	10.3	52.70	2	0
HUDSON VALLEY DISTRICT: Totals	.....	962	.....	221	23.0	83 30	3	18
ALBANY	*103,000	197	22.95	70	35.0	145.50	1	6
COHOES	*20,000	37	22.20	15	40.5	82.80	0	2
TROY	*65,000	98	18.10	28	27.5	50.00	0	0
West Troy	*13,000	27	24.92	11	40.7	37.00	0	0
Hoosick Falls	*6,000	12	24.00	3	25.0	81.33	1	0
Lansingburgh	*10,000	17	20.20	1	6.0	60.00	0	0
Green Island	*6,000	4	8.00	1	25.0	250.00	0	0
Greenbush	*8,000	13	19.50	3	23.0	230.75	0	2
Coxsackie	4,000	4	12.00	0	....	.....	0	0
Catskill	*4,500	6	16.00	1	16.7	.....	0	0
HUDSON	*13,000	15	13.90	2	13.3	.....	0	0
KINGSTON	*21,000	28	16.00	7	25.0	35.70	1	0
Ellenville	3,000	3	12.00	1	33.3	.....	0	0
Marbletown	4,000	4	12.00	1	25.0	.....	0	0
Esopus	4,736	5	12.70	0		.....	0	0
Saugerties	*4,000	2	6.00	1	50.0	.....	0	0
POUGHKEEPSIE	*20,200	45	26.73	10	22 2	444.44	0	1
Fishkill	10,732	15	17.50	5	33.3	.....	0	0
Wappinger Falls	*5,000	5	12.00	2	40.0	.....	0	0
NEWBURGH	*20,000	36	21.60	9	25.0	194.44	0	2
Port Jervis	*9,500	19	24.00	7	36 9	210.50	0	1
Middletown	*10,000	18	21.60	1	5.5	.....	0	0
Goshen	4,500	9	24.00	3	33.3	222.22	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during April, 1890.

population preceded by a star (*) are estimated to date: the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
21	0	56	122	28	40	321	77	1,117	661	52	310	336	339	578	121	191	102	666
8	0	36	109	22	30	186	59	666	418	38	183	218	195	313	78	132	41	473
8	0	15	11	5	9	121	17	343	157	11	89	82	92	213	29	39	28	150
0	0	0	0	0	0	1	0	3	0	0	1	0	1	0	0	0	0	1
0	0	0	0	0	0	1	0	2	2	0	0	1	0	0	0	0	0	1
0	0	1	0	0	0	2	0	12	5	0	2	1	1	5	0	3	1	3
0	0	0	0	0	0	0	0	5	1	0	0	0	4	1	1	1	0	1
0	0	0	0	0	0	2	0	7	5	0	2	1	2	4	0	0	0	3
0	0	0	0	0	0	2	0	4	3	0	2	2	4	1	0	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	2	1	1	2	0	0	0	1
0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	1	1	1	0
1	0	0	0	0	0	2	0	4	1	0	0	1	0	0	0	1	0	2
1	0	0	0	0	0	1	0	2	3	0	0	2	6	0	1	1	0	5
3	0	0	0	0	0	0	1	3	0	0	0	1	0	0	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0
0	0	0	0	0	0	1	0	4	4	0	2	1	2	3	4	0	2	0
0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
0	0	0	0	1	0	0	0	4	8	0	4	3	5	6	1	1	0	7
0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	1	0	0	0
0	0	1	0	0	0	1	0	1	0	0	3	0	0	3	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	1	2	0	0	0	0	0
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0	0	0	0	0	0	0	0	4	1	0	3	0	0	1	0	0	0	2
0	0	3	1	0	1	0	0	35	50	3	15	17	18	20	4	9	24	12
8	1	5	0	6	16	21	4	193	110	7	63	44	127	137	23	30	79	67
0	0	1	0	3	12	4	2	33	29	0	11	7	44	22	5	5	5	7
0	1	0	0	0	1	1	0	14	3	0	4	2	1	4	0	0	1	3
1	0	1	0	1	1	0	1	13	12	1	4	3	12	11	3	4	11	19
0	0	0	0	0	0	1	0	10	2	0	4	0	1	4	0	1	2	2
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0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	2	1	2	1	0	0	2	2
0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	3	3	1	2	1	6	5	2	2	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	1	0	0
1	0	0	0	0	0	4	0	2	2	0	2	0	2	7	0	0	5	2
2	0	0	0	0	0	1	0	2	2	0	1	2	2	4	0	2	0	0
0	0	0	0	0	0	0	0	4	3	0	1	2	2	3	0	1	2	0
0	0	0	0	0	1	1	0	3	0	0	0	0	0	1	1	0	1	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL'Y DIST.—(*Cont'd*).:								
Nyack	*5,000	6	14.40	1	16.7	.....	0	0
Ramapo	*5,000	5	12.00	1	20.0	.....	0	0
Rest of district	.....	332	.....	37	11.2	60.62	0	4
ADIROND'CK & NORTH'N DIST.:								
Totals	.....	318	.....	59	18.5	106.25	6	4
Argyle	3,700	5	16.22	0	....	.....	0	0
Greenwich	*4,000	3	9.00	0	....	.....	1	0
Salem	3,500	1	.....	0	....	.....	0	0
Fort Add	4,267	3	8.40	0	....	.....	0	0
Fort Edward	*5,000	8	19.20	1	12.5	.....	0	0
Glens Falls	*10,000	16	19.20	3	18 8	62.50	0	0
Crown Point	4,287	1	.....	0	10.0	.....	0	0
Malone	*9,000	16	21.33	5	31.3	62.50	0	0
Potsdam	*4,000	8	24.00	2	25.0	125.00	1	0
Ogdensburg	*12,000	18	18.00	4	22.2	55.50	1	0
Gouverneur	*5,500	12	26.18	3	25.0	333.33	0	0
Ellisburgh	4,811	6	15.00	2	33 3	.....	0	0
Plattsburgh	*7,000	11	18.85	6	54.5	.....	0	0
Watertown	*12,200	14	14.00	4	28.5	72 50	0	0
Cape Vincent	3,143	4	15.20	0	....	.....	0	0
Clayton	4,314	2	5.56	0	...	.....	0	0
Rest of district	.....	190	.....	28	15.5	120.12	3	4
MOHAWK VALLEY DISTRICT:								
Totals	.....	412	.....	81	22.5	87.50	4	4
Schenectady	*20,000	44	26.40	20	45.5	227.27	1	2
Schoharie	3,350	3	10.62	0	....	.....	0	0
Cobleskill	3,371	4	14.20	0	....	.....	0	0
Amsterdam	*20,000	24	.....	6	25.1	191.91	1	1
Johnstown	*6,000	6	12.00	1	16.7	.....	0	0
Gloversville	*10,000	10	12.00	2	20.0	200.00	0	0
Little Falls	*8,500	9	12.71	2	22.2	111.11	0	0
Herkimer	*3,000	3	12.00	0	....	.....	0	0
Ilion	*4,200	7	20.00	0	....	.....	0	0
Utica	*50,000	72	17.28	22	30.5	55.55	0	0
Whitestown	*5,000	10	24.00	3	30.0	300.00	0	0
Rome	12,045	19	19.00	4	21.0	52.63	0	0
Boonville	*4,000	6	18.00	0	....	.....	0	0
Camden	3,400	7	27.40	3	42.8	285.70	0	0
Waterford	*5,400	11	24.44	3	27.3	.....	0	0
Ballston Spa	3,200	5	18.75	1	20.0	200.00	0	0
Saratoga Springs	*10,000	13	15.60	3	23.1	.....	0	0
Rest of district	.....	159	.....	15	9.4	62.50	2	1
SOUTHERN TIER DISTRICT:								
Totals	.....	344	.....	63	18.5	114.50	4	5
Binghamton	*30,000	45	18.00	12	24.4	200.00	0	2
Owego	*6,000	3	6.00	0	....	.....	0	0
Candor	4,323	4	11.16	2	50.0	250.00	0	0
Waverly	*5,000	7	16.80	1	14.3	.....	0	0
Elmira	*25,000	39	18.72	7	17.9	179.60	0	0
Horseheads	3,500	6	20.57	1	16.7	166.67	1	0
Hornellsville	*10,000	16	19.20	2	12.5	250.00	2	0
Bath	3,500	2	7.00	0	....	.....	0	0
Corning	*8,000	11	16.50	6	54.5	363.63	0	2
Olean	*8,000	14	21.00	5	35.7	.....	0	0
Salamanca	*6,000	8	16.00	6	75.0	.....	0	0
Jamestown	*14,000	21	18.00	4	19.0	47.62	0	1
Fredonia	*3,000	7	28.00	....	....	142.85	0	0
Rest of district	.....	161	.....	17	10.7	68.50	1	0

FOR APRIL.—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0
3	0	2	0	1	1	8	1	74	33	3	22	18	41	51	8	7	35	0
0	0	0	7	0	5	10	2	51	41	3	32	10	16	33	8	8	43	39
0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0	1
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0	0	0	0	0	0	0	0	2	3	0	0	2	0	1	2	1	2	4
0	0	0	0	0	2	2	0	2	2	0	0	1	0	2	0	0	0	0
0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	1	4	0	5	0	0	0	0	0	0	1
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0	0	0	7	0	3	7	0	34	25	2	14	5	9	16	4	3	34	20
2	0	6	3	1	0	14	3	63	60	3	32	15	39	60	8	18	39	38
2	0	0	0	0	0	4	1	6	6	0	2	0	2	0	0	2	1	6
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0	0	0	0	0	0	0	0	1	1	0	2	1	0	2	0	0	0	0
0	0	2	0	0	0	1	1	11	10	1	0	2	14	11	3	3	3	11
0	0	0	1	0	0	1	0	3	0	0	1	2	0	0	0	0	2	0
0	0	0	0	0	0	1	0	4	4	0	0	1	1	4	0	0	1	3
0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	1	1
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0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0
0	0	1	2	0	0	4	0	25	22	1	20	8	13	16	3	10	24	7
0	0	4	4	1	6	13	2	68	34	5	26	10	32	38	12	17	37	26
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0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	2	2	0	0	1	0	0	0	0	1	1
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0	0	0	0	0	0	2	0	2	0	0	0	0	1	3	1	4	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	1	0	0	0	1	0	1	1	0	1	0	0	1	0	1	2	0
0	0	0	0	0	0	0	0	5	2	0	1	0	1	3	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	4
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0	0	1	0	0	0	0	0	1	1	0	1	0	1	1	0	0	1	0
0	0	2	4	1	1	1	1	33	12	2	15	6	15	18	7	7	22	13

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	470	.....	94	20.0	112.82	6	3
Walton	3,540	4	13.70	1	25.0	.....	0	0
Delhi	3,000	2	8.00	....	....	.....	0	0
Cooperstown	*3,000	4	16.00	1	25.0	.....	0	0
Oneonta	*7,000	7	12.00	1	14.3	142.85	0	0
Worcester	*3,000	6	24.00	....	....	166.67	1	0
Cazenovia	4,363	7	19.10	....	....	.....	0	0
Brookfield	3,685	3	9.70	1	33.3	.....	0	0
Norwich	5,500	5	11.00	....	....	.....	0	0
Hamilton	*4,000	3	9.00	2	66.6	.....	0	0
Oneida	*5,000	5	12 00	2	40.0	.....	0	0
SYRACUSE	*87,000	161	22.22	60	31.0	142.85	0	0
Cortland	*9,000	8	10.67	4	50.0	125.00	0	0
Homer	3,000	1	4.00	....	....	.....	0	0
Rest of district	.....	254	.....	22	8.8	106.30	5	3
WEST CENTRAL DISTRICT:								
Totals	.....	328	.....	50	15.2	152.50	1	8
AUBURN	*26,000	63	29.07	26	41.3	381.00	0	1
ITHACA	*10,000	11	13.20	3	27.3	181.81	0	1
Waterloo	*4,500	8	21.33	1	12.5	125.00	0	0
Seneca Falls	*6,000	9	18.00	1	11.1	111.11	0	0
Manchester	*4,000	8	24.00	....	....	250.00	1	0
Phelps	*7,000	7	12.00	1	14.3	.....	0	0
Canandaigua	*6,300	2	.....	....	....	.....	0	0
Geneva	*6,000	4	8.00	1	25.0	.....	0	0
Penn Yan	*4,500	9	24.00	1	11.1	.....	0	0
Batavia	*7,000	10	17.14	...	....	400.00	0	0
Dansville	3,700	6	19.45	1	16.7	166.67	0	1
Rest of district	.....	191	.....	15	7.8	80.00	0	5
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	883	.....	259	29 5	99.90	9	11
OSWEGO	*24,000	47	23.50	14	29.7	42.55	0	2
Richland	4,000	7	21.00	1	14.3	.....	0	0
Fulton	*4,000	5	15.00	1	20.0	.....	0	0
Clyde	*3,000	1	4.00	....	....	.....	0	0
Lyons	*6,000	10	20.00	4	40.0	100.00	0	0
Newark	3,500	2	7.00	....	....	500.00	0	0
Palmyra	*4,800	7	17.50	1	14.3	.....	0	0
ROCHESTER	*110,000	208	22.69	48	23.0	52.88	1	2
Brockport	4,500	5	13.33	1	20.0	200.00	0	1
Medina	4,000	5	15.00	1	20.0	.....	0	0
Albion	*5,000	4	9.60	1	25.0	250.00	0	1
LOCKPORT	*15,000	9	.....	3	33.3	.....	0	0
Niagara	*7,000	†16	27.43	7	43.7	187.50	0	0
BUFFALO	*230,000	339	19.13	145	42.6	132.40	8	2
Tonawanda	*5,000	7	16.80	3	42.8	.....	0	0
Amherst	4,578	6	15.70	1	16.7	.....	0	0
Rest of district	.....	205	.....	28	14.0	70.00	0	3
Totals for the State	.....	8,890	.....	2,826	31.8	121.42	49	72
Average for April for past five y'rs.	.....	7,874	.....	2,517	32.0	166.26	54	63

† For four weeks

REMARKS.—The average number of deaths each day during April was 292; in March, 299; in February, ary. The average daily death rate for April during the past five years is 263, the returns being less complete February, 119; in January, 90; the average zymotic death rate for April being 166. As returns have been at the rate of 2.31 deaths per 1,000 population annually, in April, and there has been practically the same population, has been about 2.50 per 1,000 living. The proportion of deaths under 5 years of age, which was hardly half the average, has increased each month, and is now very nearly at the average rate for April. wholly disappeared, as a considerable number of deaths occurring in April were attributed to conditions nineteen deaths from this cause in Auburn, and numerous other localities show its increased prevalence. siderable number were exposed, but up to the present time it has not spread beyond the family in which it and where there remains now but a single case. The high death rate in acute respiratory diseases and bulletins for the first quarter of the year, still continues. The death rate from consumption is very nearly

FOR APRIL — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1	0	1	18	0	3	18	3	75	53	1	44	22	46	46	9	16	46	59
0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	1
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0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1
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3	0	4	24	1	2	8	0	48	35	3	22	14	29	36	14	12	45	19
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0	0	0	0	1	0	0	0	1	0	0	1	0	2	1	0	0	1	1
0	0	0	1	0	0	0	0	3	2	0	1	0	0	0	1	0	0	1
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0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	1	0
2	0	2	3	0	1	3	0	26	21	2	14	8	20	22	7	9	33	13
7	0	2	8	6	5	27	5	166	108	1	70	33	63	118	25	38	69	111
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0	0	0	0	0	0	0	0	2	2	0	0	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	1	0	4	0	0	2	0	2	1	0	0	0	0
0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	1	0	0	2
3	0	1	1	0	1	2	0	49	25	0	21	11	8	21	6	14	15	17
0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1
0	0	0	0	0	0	0	0	2	0	0	0	1	3	0	0	1	1	1
0	0	0	3	0	0	0	0	3	3	0	0	0	0	3	0	0	1	3
1	0	1	0	5	2	22	4	61	45	1	22	13	12	52	8	13	0	67
0	0	0	0	0	0	0	0	1	1	0	1	0	0	2	0	1	1	0
0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	0	0	0	1
3	0	0	3	1	2	2	1	30	22	0	17	7	22	25	9	5	40	13
42	1	78	186	43	77	432	96	1,781	1,102	75	599	484	691	1,046	220	330	460	1,026
68	13	199	112	44	57	443	108	1,392	1,106	100	394	419	521	877	174	269	647	793

ending April 26.

306; in January, 398; showing a steady diminution in the daily death rate since the high mortality of January at present. During April 120 deaths in each 1,000 were from zymotic diseases; in March, 117.35; in received from about five and a half million of the population of the State, the zymotic mortality has been rate for the preceding months of the year. The average for April for the past five years, allowing the same was very much below the average during the four months of the year, especially during January, when it The epidemic of influenza expended itself mostly upon adults; the effects of this disease have not yet resulting from it. The only zymotic disease that has a mortality above the average is measles; there are Small-pox developed about May twelfth at Dansville, attributed, as to its origin, to imported rags; a confirst developed. The same is true at Cohoes, where it developed in March, possibly from a similar cause. diseases of the digestive and nervous systems, as also of unclassified diseases, which has characterized the that of the average for April.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

(Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	5,093	.....	1,876	36.8	140.80	25	17
NEW YORK CITY	*1,622,000	3,188	23.14	1,255	39.4	153.40	20	11
BROOKLYN	*852,467	1,366	19.00	501	36.7	128.50	0	1
Gravesend	*5,000	8	19.20	2	25.0	125.00	0	0
New Utrecht	*5,000	15	36.00	8	53.3	66.67	0	0
Flatbush	*8,000	16	24.00	2	12.5	250.00	1	1
LONG ISLAND CITY	*40,000	33	.....	12	....	.....	0	0
Newtown	*10,000	27	31.40	10	37.0	333.33	0	0
Oyster Bay	*12,000	13	.....	5	....	.....	0	0
Hempstead	18,169	10	....	3	....	.....	0	0
North Hempstead	8,000	9	13.50	1	11.1	111.11	0	0
Huntington	8,100	8	12.00	1	12.5	125.00	0	0
Jamaica	10,089	20	23.76	8	40.0	200.00	1	0
Flushing	16,000	15	.....	1	....	....	0	0
Southold	7,267	10	16.44	1	10.0	100.00	0	0
Sag Harbor	*3,000	4	16.00	1	25.0	.....	0	0
New Brighton	*15,000	27	21.60	2	11.1	111.11	0	1
Edgewater	12,000	20	20.00	3	15.0	160.00	0	1
Port Richmond	3,600	6	20.00	....	...	166.67	0	0
Westfield	7,000	7	12.00	1	14.3	142.85	1	0
YONKERS	*31,000	30	.....	6	20.0	33.33	0	1
Westchester	*7,000	12	20.57	...	....	.....	0	0
Mount Vernon	*11,000	15	.....	8	....	.....	0	0
Portchester	*4,000	.....	....	....	....	.....	0	0
Sing Sing	*6,500	10	18.46	2	20 0	.....	0	0
New Rochelle	*5,500	11	24.00	4	36 4	90.91	0	0
Peekskill	*7,000	12	20.57	6	50.0	250.00	0	0
Rest of district	... .	201	.....	33	16.5	50.00	2	1
HUDSON VALLEY DISTRICT: Totals	.....	776	.....	178	22.9	98.25	7	12
ALBANY	*103,000	147	17.12	30	20.4	108.60	2	2
COHOES	*20,000	30	18.00	9	30.0	133.33	0	2
TROY	*65,000	100	18.46	19	19.0	120.00	2	1
West Troy	*13,000	18	16.78	3	17.7	59.00	0	1
Hoosick Falls	*6,000	8	16.00	3	37.5	.....	0	0
Lansingburgh	*10,000	9	.....	1	....	.....	0	0
Green Island	*6,000	2	.....	1	....	.....	0	0
Greenbush	*8,000	18	27.00	....	....	277.77	0	4
Coxsackie	4,000	7	21.00	....	...	142.85	0	0
Catskill	*4,500	6	16.00	2	33.3	166.67	1	0
HUDSON	*13,000	12	11.10	1	8.3	.....	0	0
KINGSTON	*21,000	20	11.43	6	30.0	350.00	1	0
Ellenville	3,000	4	16.00	....	...	.....	0	0
Marbletown	4,000	6	18.00	1	16.7	.....	0	0
Esopus	4,736	4	10.20	2	50.0	250.00	0	0
Saugerties	*4,000	6	18.00	2	33.3	....	0	0
POUGHKEEPSIE	*20,200	27	15.54	7	25.8	74.07	0	0
Fishkill	10,732	21	23.55	7	33.3	95.24	0	0
Wappinger Falls	*5,000	3	7.20	3	10.0	333.33	0	0
NEWBURGH	*20,000	28	16.80	1	3.5	35.72	0	0
Port Jervis	*9,000	13	17.33	2	15.4	.....	0	0
Middletown	*10,000	14	16.80	2	14.3	71.43	0	1
Goshen	4,500	12	32.00	7	58.3	583.30	0	0
Haverstraw	*7,000	8	13.71	3	37.5	.....	0	0
Nyack	*5,000	7	16.80	....	....	.....	0	0
Ramapo	*5,000	10	24.00	...	....		0	0
Rest of district	.....	236	.....	36	15.3	58.60	1	1

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during May, 1890.

populations preceded by a star (*) are estimated to date: the remainder are from the of 1880.

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
31	0	30	150	24	39	296	106	919	666	55	286	342	362	543	152	212	100	738
15	0	22	129	18	26	167	81	575	422	34	171	218	210	271	102	145	45	506
12	0	7	19	6	12	105	14	261	166	15	78	89	91	204	39	41	23	183
0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	2	0	1
0	0	0	0	0	0	1	0	3	2	0	0	0	0	4	0	5	0	0
0	0	0	0	0	0	2	0	2	1	0	1	2	2	2	0	0	0	2
0	0	0	1	0	0	2	1	8	3	0	2	0	6	4	1	1	0	6
1	0	0	0	0	0	8	0	6	2	0	1	2	0	0	0	1	0	9
0	0	0	3	0	1	0	1	4	0	0	1	0	4	1	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	1	0	1	2	1	1	1	2
0	0	0	0	0	0	1	0	1	1	0	1	1	1	1	0	1	1	0
0	0	0	0	0	0	1	1	1	1	0	1	0	0	2	1	0	1	0
1	0	0	0	0	0	2	0	2	1	0	2	0	3	4	0	0	3	1
0	0	0	0	0	0	0	0	2	2	0	2	3	1	1	1	1	0	2
1	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	0	3	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0
0	0	0	0	0	0	1	0	3	8	0	1	0	4	3	0	0	4	2
0	0	1	0	0	0	0	0	3	4	0	2	4	0	2	1	2	0	0
1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	1	1	0	0
0	0	0	0	0	0	0	0	6	6	0	3	2	2	5	0	2	0	3
0	0	0	0	0	0	0	0	2	1	0	0	0	0	4	0	1	2	2
0	0	0	0	0	0	0	4	4	0	0	3	0	1	2	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	3	2	0	1	0	0	3	1	0	0	0
0	0	0	0	0	0	1	0	1	1	1	0	0	3	2	0	0	1	1
0	0	0	0	0	0	1	2	0	1	0	1	1	1	0	0	0	1	4
0	0	0	1	0	0	4	2	29	39	3	13	17	27	24	3	6	14	16
5	0	6	1	1	10	24	10	125	95	5	58	50	78	101	26	26	76	60
0	0	1	0	1	4	5	1	30	15	3	8	11	16	20	4	6	3	15
0	0	1	0	0	0	0	1	2	5	0	5	1	2	5	0	1	1	4
0	0	0	0	0	3	2	4	23	14	1	10	6	7	6	2	3	6	10
0	0	0	0	0	0	0	0	3	7	0	1	0	2	0	2	0	0	2
0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	1	1	1
0	0	0	0	0	0	0	0	1	2	0	0	2	0	2	0	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	1	3	0	0	0	0	5	2	1	1	1	3
0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3	2
0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	2	0	3	1	1	0	4	0
0	0	0	0	0	1	4	1	2	2	1	2	0	2	2	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	1	1
0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	1	0	0	1	0	3	0	0	0	0
2	0	0	0	0	0	0	0	3	1	0	2	2	3	6	0	0	3	5
2	0	0	0	0	0	0	0	5	5	0	0	2	2	0	0	2	1	2
1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	5	0	2	3	4	8	1	2	1	0
0	0	0	0	0	0	0	0	0	3	0	0	1	4	4	0	1	0	0
0	0	0	0	0	0	0	0	1	3	0	1	1	1	3	1	0	0	2
0	0	0	0	0	0	7	0	0	1	0	0	0	0	1	0	0	3	0
0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	1	0	0	1
0	0	0	0	0	0	0	0	1	4	0	0	2	0	0	0	0	2	1
0	0	3	1	0	1	5	2	37	24	0	20	14	22	34	13	7	40	11

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
ADIRONDACK & NORTH'N DIST.: Totals	.....	332	.....	59	18.0	81.80	1	4
Argyle	3,700	7	27.70	....	....	.....	0	0
Greenwich	*4,000	4	12.00	1	25.0	.....	0	0
Fort Ann	4,267	2	5.58	....	....	.....	0	0
Fort Edward	*5,000	4	9.60	....	....	.....	0	0
Glens Falls	*10,000	18	21.60	3	16.7	111.11	0	1
Whitehall	*4,000	6	18.00	2	33.3	.....	0	0
Malone	*9,000	16	20.15	1	6.2	187.50	0	0
Potsdam	*4,000	3	9.00	1	33.3	.....	0	0
OGDENSBURG	*12,000	17	17.00	2	11.7	58 88	0	0
Gouverneur	*5,500	1	.....	....	....	.....	0	0
Ellisburgh	4,811	11	27.48	2	19.2	191 91	0	0
Plattsburgh	*7,000	14	24.00	3	21.4	142.85	0	1
WATERTOWN	*12,200	26	25.41	11	42.3	.....	0	0
Cape Vincent	3,143	1	.....	....	....	.....	0	0
Clayton	4,314	5	14.00	1	20.0	.....	0	0
Rest of district	.....	197	.....	32	16.0	85.55	1	2
MOHAWK VALLEY DISTRICT: Totals	.....	423	.....	100	23.5	138.05	5	7
SCHENECTADY	*20,000	36	21.60	14	37.0	222.22	0	4
Schoharie	3,350	6	21.50	1	16.7	.....	0	0
Cobleskill	3,371	6	21.18	2	33.3	.....	0	0
AMSTERDAM	*20,000	20	12.00	4	20.0	200.00	0	1
Johnstown	*6,000	7	14.00	1	14.3	142.85	0	0
GLOVERSVILLE	*10,000	13	15.60	3	23.1	307.70	0	0
Little Falls	*8,500	8	11.30	1	12.5	125.00	0	0
Herkimer	*3,000	2	8.00	....	....	.....	0	0
Ilion	*4,200	3	8.57	2	66.6	.....	0	0
UTICA	*50,000	99	23.76	32	32.3	120.00	4	1
Whitestown	*5,000	5	12 00	2	40.0	200.00	0	0
ROME	12,045	24	23.90	2	8.3	250 00	0	0
Boonville	*4,000	2	6.00	....	....	.....	0	0
Camden	3,400	5	17.68	1	20.0	800.00	0	0
Waterford	*5,400	4	9.00	3	75.0	... .	0	0
Ballston Spa	3,200	4	15.00	1	25.0	.....	0	0
Saratoga Springs	*10,000	11	.....	1	...	.....	0	0
Rest of district	.....	168	.....	30	18.0	90.00	1	1
SOUTHERN TIER DISTRICT: Totals	.....	305	.....	64	21.0	132.50	2	3
BINGHAMTON	*30,000	44	17.60	11	25.0	113.68	0	0
Owego	*6,000	5	10.00	1	20.0	.... .	0	0
Candor	4,333	5	13.85	1	20.0	200.00	0	0
Waverly	*5,000	5	12.00	1	20.0	.....	0	0
ELMIRA	*25,000	39	18.72	14	35.9	205.13	0	0
Horseheads	3,500	5	17.14	3	60.0	200.00	0	0
HORNELLSVILLE	*10,000	10	12.00	4	40.0	400.00	0	1
Bath	3,500	1	.....	....	...	.....	0	1
CORNING	*8,000	1	.....	1	....	.....	0	0
Olean	*8,000	8	12.00	3	37.5	375.00	0	0
Salamanca	*6,000	4	8.00	3	75.0	.....	0	0
JAMESTOWN	*14,000	20	17.14	....	....	.....	0	0
Westfield	*3,000	2	8.00	....	....	.....	0	0
Rest of district	.....	156	.....	22	14.1	192.57	2	1

FOR MAY—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal.)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	0	1	7	2	3	6	1	58	34	7	26	11	32	37	15	12	37	36
0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	1	0	3	2	0	3	0	1	2	0	0	3	2
0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	2
0	0	0	0	1	0	2	0	3	1	0	2	1	2	0	0	1	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
1	0	0	0	0	0	0	0	2	4	0	2	0	2	2	1	1	1	1
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0	0	0	1	0	1	0	0	3	0	0	0	1	0	1	0	0	1	3
0	0	0	1	0	0	0	0	4	1	0	0	0	3	1	1	0	1	1
0	0	0	0	0	0	0	0	7	4	2	2	0	2	2	1	0	2	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	2
1	0	1	5	1	2	3	1	32	19	5	15	8	19	25	11	8	21	17
1	0	5	2	2	2	25	9	50	45	5	36	19	41	62	19	15	35	38
0	0	0	0	0	0	1	3	3	1	0	4	1	4	6	3	0	2	4
0	0	0	0	0	0	0	0	2	0	0	1	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	2
0	0	0	0	0	0	3	0	0	4	0	0	1	0	2	0	3	0	6
0	0	0	0	0	0	0	1	0	2	0	1	0	2	0	0	1	0	0
1	0	0	0	0	1	1	1	1	1	0	0	1	0	4	0	0	2	0
0	0	0	0	0	0	1	0	0	2	0	1	1	1	1	0	1	0	0
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0	0	0	0	0	1	4	2	10	12	1	6	4	10	22	8	2	3	9
0	0	0	0	0	0	1	0	2	0	0	1	1	0	0	0	0	0	0
0	0	1	1	0	0	4	0	3	2	0	2	0	1	5	1	2	1	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
0	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0
0	0	0	0	1	0	0	1	1	2	0	3	0	1	0	1	0	1	0
0	0	0	1	1	0	25	10	42	26	7	24	8	22	35	11	21	47	22
0	0	0	3	0	1	1	0	6	8	3	3	2	2	3	1	3	8	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	1
0	0	1	0	0	0	0	0	1	0	0	0	0	0	2	0	0	1	0
0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	1	0	0
1	0	1	1	0	3	1	1	9	4	0	1	0	3	5	1	1	2	4
0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1
0	0	3	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	2	0	0	0	0	0	0	0	2	0	0	1	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1
0	0	0	0	0	0	0	0	4	3	0	3	0	2	3	3	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
0	0	2	2	0	1	8	0	20	10	2	12	5	13	18	4	8	36	12

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	422	.....	73	18.2	82.00	4	4
Delhi	3,000	5	20.00	....	....	.....	0	0
Cooperstown	*3,000	2	8.00	....	....	.....	0	0
Oneonta	*7,000	12	20.57	1	8.4	166.67	0	0
Worcester	*3,000	2	8.00	....	....	.....	0	0
Cazenovia	4,363	5	14.00	....	....	.....	0	0
Brookfield	3,685	5	16.25	....	....	.....	0	0
Norwich	5,500	7	15.30	1	14.3	.....	0	0
Hamilton	*4,000	2	6.00	....	....	.....	0	0
Oneida	*5,000	7	16.80	2	28.5	.....	0	0
Baldwinsville	3,000	5	20.00	2	40.0	200.00	0	0
SYRACUSE	*87,000	144	19.86	48	33.2	118.00	4	1
Cortland	*9,000	9	12.00	1	11.1	222.22	0	0
Homer	3,000	3	12.00	1	33.3	.....	0	0
Rest of district	.....	214	.....	17	8.8	60.00	0	3
WEST CENTRAL DISTRICT:								
Totals	.....	289	.....	38	13.1	103.40	1	7
AUBURN	*26,000	51	23.54	9	17.7	23.04	1	1
ITHACA	*10,000	12	14.40	2	16.7	250.00	0	1
Waterloo	*1,500	2	.....	2	..	500.00	0	0
Seneca Falls	*6,000	13	25.00	5	38.0	153.80	0	0
Manchester	*4,000	5	15.00	0	....	.....	0	0
Phelps	*7,000	12	20.57	1	8.3	.....	0	0
Canandaigua	*6,300	4	7.50	0	....	.....	0	0
Geneva	*6,000	10	20.00	2	20.0	200.00	0	0
Penn Yan	*4,500	3	8.00	0	....	.....	0	0
Batavia	*7,000	9	15.43	2	22.2	111.11	0	0
Rest of district	.....	168	.....	15	8.8	94.13	0	5
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	1,019	.....	352	35.0	110.00	14	12
OSWEGO	*24,000	21	10.50	5	23.8	47.60	0	0
Richland	4,000	5	15.00	1	20.0	200.00	0	0
Clyde	*3,000	6	24.00	3	50.0	160.67	0	0
Lyons	*6,000	6	12.00	2	33 3	666.66	0	2
Newark	3,500	5	16.29	1	20.0	.....	0	0
Palmyra	*4,800	6	15.00	1	16.7	333.33	0	0
ROCHESTER	*130,000	181	16.70	49	26.1	50.00	0	2
Brockport	4,500	4	10.70	0	...	.....	0	0
Medina	4,000	9	27.00	1	11.1	333.33	0	0
Albion	*5,000	8	19.20	1	12.5	125.00	0	0
LOCKPORT	*15,000	11	.....	3	30.0	.....	0	0
Niagara	*7,000	†17	29.14	13	76.5	411.76	0	0
BUFFALO	*250,000	534	22.22	252	48.2	116.10	13	6
Tonawanda	*5,000	8	19.20	4	50.0	125.00	0	0
Amherst	4,578	7	18.26	1	14.3	142.85	0	0
Rest of district	.....	191	.....	15	8.0	94.84	1	2
Totals for the State	.....	8,659	.....	2,740	31.6	130.95	59	66
Average for May for past five years	.....	7,624	.....	2,452	32.4	150.70	53	52

† For five weeks

REMARKS.—There were about 280 deaths daily during the month of May, according to the reported each month, and is slightly less than the average daily death rate of 1889 for the entire year. The population The death rate per 1,000 population of the cities, villages and large towns recorded separately in the in each 1,000 deaths from all causes; this ratio is lower than the average for the month of May, and lower higher by ten deaths per 1,000 than in the month of April; the proportion of zymotic mortality to other bulletin, by the existence of the epidemic of influenza, the effect of which was entirely felt in increasing still noted, for a not inconsiderable number of deaths during May were certified to as due in part to this, has been at the rate of about 2.45 per 1,000 population annually, which is higher than that of April. The Measles continues to increase, its distribution being in the western and southern sections of the State. Whitehall, Dolgeville, Madison, and has been prevalent in a number of small villages, but the total mortality each month since the high rate of January, and the same is true of acute respiratory diseases, in which for the month of May.

FOR MAY—(*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
3	0	1	5	0	3	12	2	63	48	5	31	14	42	52	13	19	50	51
0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	2	0	2	0	1	0	0	3	1	1	1	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	2	0
0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	1	2	0	0	1	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	4	0	2	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0
2	0	1	2	0	0	5	2	33	17	1	10	4	10	22	3	6	8	13
0	0	0	0	0	1	1	0	0	0	0	1	0	3	1	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0
1	0	0	2	0	2	4	0	26	21	3	15	8	22	19	8	11	33	36
3	....	1	7	1	1	8	1	39	26	3	19	17	33	35	15	15	35	22
0	0	0	1	0	0	2	0	1	9	0	2	1	3	10	5	3	1	2
0	0	0	0	0	0	2	0	0	1	0	0	1	2	3	0	0	1	1
0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	4	3	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1
0	0	0	0	0	0	0	0	2	1	0	0	0	4	1	1	0	2	1
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
0	0	0	2	0	0	0	0	0	1	0	2	1	0	2	1	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	1	0	0	0	0	0	2	1	2	0	2	0	1
2	0	1	3	1	0	3	1	20	10	3	15	10	21	16	8	9	27	13
9	....	6	19	4	3	35	9	242	108	8	59	47	81	134	22	51	56	100
0	0	0	0	0	0	1	0	2	4	1	1	2	4	2	0	0	0	4
0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	2	0
0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2
0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	0	1	0	0
2	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0
2	0	0	0	0	0	3	2	44	18	2	13	17	15	29	6	11	7	10
0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0
0	0	1	0	1	0	1	0	2	1	0	0	1	0	2	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	1	1	2	0	1	0	2	0
0	0	0	0	0	0	0	0	4	0	0	0	0	2	2	0	0	1	2
0	0	0	5	0	0	1	1	0	2	0	1	0	0	3	0	0	1	3
3	0	1	9	1	3	22	4	161	62	3	27	19	26	54	10	26	19	65
0	0	0	0	0	0	0	1	2	2	1	0	0	1	0	0	0	0	1
0	0	0	0	1	0	0	0	0	1	0	1	0	1	1	0	0	2	0
2	0	3	4	0	0	6	0	25	16	1	10	7	30	35	4	12	20	13
55	0	58	200	34	67	416	139	1,538	1,048	95	539	508	691	999	273	371	436	1,067
64	18	181	103	42	67	474	131	1,116	1,093	84	407	398	493	849	195	350	566	886

ending May 31.

returns; this is less than for either preceding months of the year, there having been a steady diminution of the reporting health districts being about 5,300,000, the annual death rate per 1,000 is 19.40 for the State, bulletin is 21.02, their aggregate population being about 4,080,000. Zymotic diseases have caused 131 deaths than it was at any time in 1889; it is, however, higher than for either of the preceding months of 1890, and deaths has, however, been much distorted from the average, as has been noted in previous issues of the the number of deaths from local diseases. The results (more than its continuance) of this epidemic are chiefly of deaths occurring among the aged or those weakened by chronic diseases. The zymotic mortality actual number of zymotic deaths reported has not, however, varied much during the months of this year. There is a slight rise in the number of deaths from diarrhœas. Diphtheria has occurred epidemically at is less than in any month of this year. The reported mortality from consumption has diminished steadily there has been a diminution of more than fifty per cent, although still considerably higher than the average

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	5,838	.....	2,877	49.3	269.00	6	26
NEW YORK CITY	*1,622,000	3,485	26.45	1,760	50.5	275.00	6	11
BROOKLYN	*852,467	1,716	24.45	882	51.3	276.18	0	11
Gravesend	*6,912	9	15.65	4	44.4	444.44	0	0
New Utrecht	*5,000	14	33.60	6	42.8	428.50	0	0
Flatbush	*8,000	11	16.50	3	27.3	272.73	0	0
LONG ISLAND CITY	*40,000	81	24.30	48	60.0	324.50	0	0
Newtown	*10,000	32	38.40	16	50.0	250.00	0	0
Oyster Bay	*12,000	10	.....	3	....	.....	0	0
Hempstead	18,160	15	.....	6	40.0	266.67	0	0
North Hempstead	8,000	11	16.50	6	54.5	272.72	0	0
Jamaica	10,089	19	22.50	9	47.4	263.12	0	0
Flushing	16,000	20	15.00	9	45.0	200.00	0	1
Southold	7,500	11	17.60	1	9.1	.....	0	0
Sag Harbor	*3,000	3	12.00	0	....	.....	0	0
Huntington	8,100	13	19.26	2	15.4	77.10	0	0
New Brighton	*15,000	23	18.40	6	24.0	43.50	0	0
Edgewater	12,000	30	30.00	10	33.3	333.33	0	0
Port Richmond	*3,600	7	28.00	4	57.1	285.00	0	0
Westfield	7,000	16	27.43	5	31.2	375.00	0	1
YONKERS	*31,949	49	18.48	27	55.1	381.00	0	0
Westchester	*7,000	3	.....	1	33.3	333.33	0	0
Mount Vernon	*11,000	14	15.27	8	57.1	214.28	0	0
Portchester	*5,000	1	.....	0	....	.....	0	0
Sing Sing	*6,500	14	25.80	1	7.2	142.90	0	1
New Rochelle	*6,000	11	22.00	7	63.6	363.63	0	0
Peekskill	*7,000	7	12.00	1	14.3	285.71	0	0
Rest of district	.....	213	.....	52	26.0	122.07	0	1
HUDSON VALLEY DISTRICT: Totals	.....	713	.....	174	24.5	146.27	6	11
ALBANY	*103,000	152	17.70	41	27.2	184.21	2	5
COHOES	*20,000	21	12.60	10	47.6	95.24	0	0
TROY	*65,000	110	20.30	26	23.7	172.72	2	3
West Troy	*13,000	20	18.48	6	30.0	200.00	1	0
Green Island	*6,000	6	12.00	2	33.3	333.33	0	0
Lansingburgh	*10,000	10	12.00	5	50.0	100.00	0	0
Hoosick Falls	*6,000	5	10.00	0	....	200.00	0	0
Greenbush	*8,000	9	13.50	4	44.4	444.44	0	0
Coxsackie	4,000	0	.....	0	....	.....	0	0
Catskill	*4,930	4	9.63	2	50.0	.....	0	0
HUDSON	*13,000	17	15.69	1	5.9	117.68	0	0
KINGSTON	*21,000	28	18.69	9	32.1	285.71	1	0
Ellenville	3,000	1	4.00	0	...	.....	0	0
Marbletown	4,000	7	21.00	1	14.3	165.37	0	0
Esopus	4,736	5	12.75	3	60.0	.....	0	0
Saugerties	*4,000	5	15.00	1	20.0	.....	0	0
POUGHKEEPSIE	*20,200	31	18.42	8	27.0	98.65	0	0
Fishkill	10,732	7	.....	2	28.5	142.85	0	0
Wappinger Falls	*5,000	3	7.20	0	....	.....	0	0
NEWBURGH	*20,000	29	17.40	13	43.5	134.40	0	0
Port Jervis	*9,500	13	15.70	2	15.4	.....	0	0
Middletown	*10,000	16	19.20	4	25.0	62.50	0	0
Goshen	*4,500	7	18.68	2	28.5	.....	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during June, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrheal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrheal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
39	0	57	122	21	67	276	957	640	600	52	466	356	274	597	128	272	101	781
20	0	37	107	14	46	131	583	392	368	40	295	207	173	272	80	175	33	495
13	0	17	15	4	18	114	283	207	159	10	139	95	66	226	30	63	31	215
0	0	0	0	0	0	3	1	0	1	0	0	0	0	1	1	1	0	1
0	0	0	0	0	1	0	5	2	2	0	0	2	0	1	0	1	0	0
0	0	0	0	0	0	3	0	0	2	0	1	1	0	3	0	0	1	0
0	0	0	0	0	1	7	18	9	2	0	3	10	6	9	0	4	2	10
2	0	0	0	0	0	1	5	1	2	0	1	1	0	7	1	1	2	8
0	0	0	0	0	1	0	0	1	1	0	0	1	0	4	0	0	1	1
0	0	0	0	0	0	3	1	0	1	0	1	0	0	3	0	2	2	2
0	0	1	0	1	0	0	1	0	0	0	2	1	1	3	0	0	0	1
0	0	0	0	0	0	2	3	0	1	0	2	3	0	2	0	3	0	3
0	0	0	0	0	0	0	3	0	3	0	1	0	3	4	0	0	1	4
0	0	0	0	0	0	0	0	0	2	0	2	1	2	2	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0
0	0	0	0	1	0	0	0	2	2	0	0	1	1	3	1	1	0	1
0	0	0	0	0	0	0	1	3	2	0	2	3	1	3	3	0	1	4
1	0	0	0	0	0	0	4	5	4	0	1	1	1	3	2	2	1	1
0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	0	1	0	0
0	0	0	0	0	0	0	5	3	1	0	0	2	2	1	0	0	1	0
0	0	1	0	0	0	0	18	3	8	0	1	4	0	7	1	2	2	2
0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1
0	0	1	0	0	0	0	2	1	1	0	1	1	0	1	1	1	0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	0	2	0	2	1	1	2	1	1	1	1
0	0	0	0	0	0	1	3	0	0	0	0	0	0	4	0	2	1	0
0	0	0	0	0	0	2	0	0	0	0	0	0	2	1	0	0	2	0
2	0	0	0	1	0	7	15	12	36	0	11	19	15	33	7	11	18	29
9	0	4	3	4	7	30	32	76	93	4	46	43	79	91	17	44	36	78
0	0	2	0	2	0	5	12	16	15	1	7	13	12	18	6	6	5	25
0	0	0	0	0	1	1	0	1	2	0	2	2	2	5	0	0	0	5
0	0	0	2	0	0	3	9	15	15	1	7	5	8	15	2	7	4	12
1	0	0	0	0	0	1	1	5	0	1	1	1	4	1	1	0	0	2
0	0	0	0	0	1	1	0	0	2	0	0	0	0	1	0	1	0	0
0	0	0	0	0	0	0	1	0	3	0	0	0	0	5	0	0	0	1
0	0	0	0	0	0	1	0	0	1	0	0	1	0	2	0	0	0	0
0	0	0	0	0	0	3	1	0	1	0	0	0	3	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0
0	0	0	0	0	0	2	0	0	4	0	0	1	6	2	1	1	0	0
1	0	0	0	1	1	3	1	4	4	0	2	2	4	4	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0	0	0	1
0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	0	0	0	0
1	0	0	0	0	0	1	1	2	7	0	0	0	1	4	0	4	4	6
0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	[illegible]	[illegible]	[illegible]	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	[illegible]	[illegible]	[illegible]	[illegible]	0
0	0	0	0	0	0	3	1	3	0	0	1	1	3	[illegible]	[illegible]	[illegible]	4	1
0	0	0	0	0	0	0	0	0	4	0	1	0	1	1	0	3	1	2
1	0	0	0	0	0	0	0	2	3	0	2	0	2	1	0	3	0	2
0	0	0	0	0	0	0	0	1	0	0	2	0	0	2	0	1	0	1

	Population	Total number of deaths	Representing annual death-rate per 1,000 of	Deaths under 5 years	Percentage of deaths under 5 years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal fever	Typhoid fever
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FOR JUNE — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1	0	0	0	0	0	1	0	2	0	0	3	0	3	2	0	1	0	1
0	0	0	0	0	0	0	0	0	3	0	0	1	1	0	0	0	0	1
3	0	2	1	1	3	7	3	23	23	1	16	14	23	20	4	12	16	15
3	0	0	1	0	0	13	6	32	33	2	18	8	26	35	6	7	24	37
0	0	0	0	0	0	0	0	5	2	0	3	0	2	2	1	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
0	0	0	0	0	0	2	0	1	1	0	0	0	0	7	0	0	2	5
0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	2	0	0	2	0	0	0	0	1	1	0	3	1
0	0	0	0	0	0	4	0	0	1	0	0	0	0	1	0	2	1	1
0	0	0	0	0	0	0	0	0	3	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	0
0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	0	0	0	4
2	0	0	1	0	0	5	4	23	18	2	11	7	16	18	3	3	15	19
3	0	3	3	2	1	19	8	23	39	6	22	20	38	69	10	12	40	30
3	0	0	0	0	0	0	3	3	3	0	2	3	2	5	1	1	1	6
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1
0	0	0	0	0	0	1	1	1	3	0	0	0	1	5	1	0	1	0
0	0	0	0	0	0	1	1	0	0	0	0	1	0	2	0	0	1	0
0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0	0	1	2
0	0	0	0	0	0	0	1	0	3	1	0	0	2	2	0	1	1	2
0	0	0	0	0	0	0	0	0	1	0	0	0	3	2	0	1	2	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	0	0	0	1
0	0	0	0	0	0	4	1	4	10	3	3	5	5	15	1	0	0	9
0	0	0	2	0	0	1	0	0	3	0	3	0	1	1	0	1	0	0
0	0	0	0	0	0	3	0	1	1	0	2	0	1	3	0	1	6	4
0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	1	0
0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	1	0	0	1	0	0	1	3	2	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	3	0
0	0	0	0	0	0	0	0	2	2	0	0	0	1	3	1	1	0	0
0	0	0	1	2	1	8	2	11	12	2	12	7	12	23	6	5	22	4
0	0	0	6	0	4	6	5	26	23	2	30	13	26	30	16	24	18	23
0	0	0	4	0	0	0	3	4	7	0	2	2	1	6	0	3	1	1
0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	1
0	0	0	1	0	1	4	0	3	6	0	5	2	2	2	2	1	2	6
0	0	0	0	0	2	0	0	2	0	0	2	0	1	0	2	3	0	2
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	1	0	4
0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	1	1	17	8	1	19	9	14	16	12	14	12	6

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	.....	7,410	.....	4,224	56.6	282.71	23	33
NEW YORK CITY	*1,621,385	4,254	30.73	2,309	54.5	262.33	16	22
BROOKLYN	*832,467	2,219	30.63	1,394	62.3	291.30	8	17
Gravesend	*5,312	20	34.78	14	70.0	456.00	0	0
New Utrecht	*3,000	27	64.80	19	70.3	333.33	0	0
Flatbush	*8,000	25	37.50	18	72.0	280.00	0	0
LONG ISLAND CITY	*40,000	110	33.00	65	60.3	463.63	0	0
Newtown	*10,000	56	67.21	34	60.7	392.85	0	0
Oyster Bay	*12,000	18	.....	2	23.3	.....	0	0
Hempstead	15,160	45	29.56	27	60.0	200.00	0	0
North Hempstead	8,000	23	34.50	7	30.4	347.82	0	0
Jamaica	10,089	36	21.09	19	73.0	500.00	0	0
Flushing	18,000	42	31.50	20	47.6	357.50	0	0
Southold	7,500	13	20.80	2	15.4	384.60	0	0
Sag Harbor	*3,000	2	8.00	.....	.....	.....	0	0
Huntington	8,200	15	22.22	5	33.3	200.00	0	0
New Brighton	*15,000	39	31.20	19	47.0	282.05	0	0
Port Richmond	*3,000	7	23.33	4	57.1	571.43	0	0
Westfield	7,000	20	34.29	9	45.0	250.00	0	0
YONKERS	*32,949	99	36.23	36	54.3	457.13	0	0
Westchester	*7,000	3	8.57	2	66.6	333.33	0	0
Portchester	*3,263	14	28.56	13	92.8	500.00	0	0
Sing Sing	*8,500	11	30.30	5	45.5	181.81	0	0
New Rochelle	*8,000	19	36.00	8	44.4	333.33	1	0
Peekskill	*7,000	13	21.67	5	43.7	250.00	0	0
Rest of district	.....	319	.....	206	32.0	322.50	1	1
HUDSON VALLEY DISTRICT:								
Totals	.....	1,055	.....	390	38.0	290.00	5	10
ALBANY	*101,000	198	25.05	89	44.8	303.00	3	1
Coxsackie	*10,000	46	37.37	28	58.8	347.73	0	2
TROY	*63,000	162	30.00	70	43.0	272.00	0	0
West Troy	*13,000	34	32.30	15	47.1	323.53	0	0
Green Island	*4,000	13	36.00	8	61.5	.....	0	0
Lansingburgh	*10,000	19	22.80	10	52.6	333.33	0	0
Hoosick Falls	*5,100	3	6.00	.....	.....	.....	0	0
Greenbush	*3,000	11	19.50	6	46.1	307.70	1	1
Coxsackie	4,000	8	24.00	5	62.5	500.00	0	0
Catskill	*4,500	8	19.45	3	37.5	250.00	0	0
HUDSON	*13,000	28	28.05	5	17.7	63.55	0	0
KINGSTON	*21,000	36	20.57	19	50.0	302.50	1	0
Ellenville	3,000	1	4.00	.....	.....	.....	0	0
Marbletown	4,000	3	9.00	1	33.3	333.33	0	0
Esopus	4,728	8	22.80	2	40.0	.....	0	0
Saugerties	*4,000	11	33.00	6	45.5	727.27	0	0
POUGHKEEPSIE	*20,200	37	.....	13	40.7	294.59	0	0
Fishkill	10,722	19	20.20	10	52.5	444.44	0	0
Wappinger Falls	*5,000	8	21.04	1	16.7	333.37	0	1
NEWBURGH	*20,000	54	32.40	29	57.7	400.33	0	0
Port Jervis	*9,500	16	23.22	1	6.3	.....	0	0
Middletown	*10,000	22	28.20	9	42.8	285.72	0	0
Goshen	*5,200	9	26.00	1	11.1	.....	0	0
HAVERSTRAW	*7,200	18	30.33	9	50.0	333.33	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during July, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
35	0	35	74	10	98	229	2,153	489	672	43	685	350	294	643	130	292	128	974
12	0	24	63	7	61	125	1,208	300	428	28	392	217	162	296	78	187	46	573
13	0	8	7	3	34	83	650	151	157	12	230	97	68	248	38	67	28	303
0	0	0	0	0	0	1	12	1	1	0	2	0	1	0	0	1	0	1
0	0	0	0	0	0	0	15	0	1	0	2	1	1	1	0	1	1	4
0	0	0	1	0	0	0	6	1	2	0	4	0	1	6	0	2	0	2
2	0	0	1	0	0	7	39	12	5	0	5	6	7	8	1	2	1	12
2	0	0	0	0	1	2	17	2	4	0	4	1	4	9	0	1	2	7
0	0	0	0	0	0	0	1	0	4	0	2	0	1	1	0	3	3	3
0	0	0	0	0	0	1	16	0	1	0	6	1	4	2	3	3	2	6
0	0	0	1	0	0	0	7	1	1	0	1	0	4	5	0	2	0	1
0	0	0	0	0	0	1	12	1	0	0	2	0	0	5	0	1	2	2
0	0	0	0	0	0	0	10	2	3	0	5	0	1	4	3	4	4	6
1	0	0	0	0	0	0	2	0	1	0	0	0	1	0	1	0	3	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	3	0	2	0	0	1*	1	2	0	1	4	1
0	0	0	0	0	0	0	14	2	4	1	5	2	2	1	0	4	1	3
0	0	0	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	2
0	0	0	0	0	1	0	5	1	4	0	1	1	1	3	1	0	1	1
1	0	2	1	0	0	1	27	2	9	0	2	7	4	9	0	0	1	4
0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	0	12	0	2	0	1	1	0	2	0	0	0	0
0	0	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	4	2
0	0	0	0	0	0	0	5	0	3	0	3	0	2	0	0	2	0	2
0	0	0	0	0	0	0	3	1	0	0	0	0	1	1	0	0	2	4
4	0	1	0	0	1	7	83	12	35	2	18	15	26	38	5	14	23	32
3	0	3	1	1	11	13	245	61	97	8	93	48	66	139	22	58	50	81
0	0	0	0	0	2	3	51	9	25	2	15	7	10	31	5	5	4	25
0	0	0	0	0	0	3	11	5	2	0	5	3	2	7	1	2	1	2
0	0	0	0	0	1	0	60	17	11	0	11	4	6	27	1	5	8	12
0	0	0	0	0	1	2	8	2	2	0	5	1	1	4	0	2	3	3
0	0	0	0	0	0	0	0	0	1	0	2	0	0	1	1	1	0	0
0	0	0	0	0	0	0	5	0	4	0	1	1	0	4	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0
0	0	0	0	0	0	0	2	0	1	0	1	0	2	1	0	0	0	4
0	0	0	0	0	0	1	3	0	1	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	2	0	1	0	0	0	5	0	0	0	1	0
0	0	1	0	0	0	0	0	1	1	0	3	0	3	3	0	5	1	0
2	0	0	0	0	2	0	8	5	3	0	2	2	4	5	1	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2
0	0	0	0	0	0	0	2	0	2	0	2	0	0	2	0	0	2	1
0	0	0	0	0	0	0	7	3	1	0	1	3	2	1	0	2	1	6
1	0	0	0	0	0	0	7	0	2	1	0	1	1	1	0	0	1	3
0	0	0	0	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0
0	0	0	0	0	1	1	20	1	4	0	4	4	2	3	2	5	2	5
0	0	0	0	0	0	0	0	1	2	0	3	1	5	0	2	2	0	0
0	0	0	0	0	0	0	6	0	2	1	0	0	2	5	1	2	1	1
0	0	0	0	0	0	0	0	0	1	0	1	2	0	1	1	1	0	3
0	0	0	0	0	0	0	6	0	2	0	3	1	1	2	0	0	1	2

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Nyack	*5,000	2	.....	2	....	.....	0	0
Rest of district	.....	265	.....	50	19.0	215.00	0	2
ADIROND'CK & NORTH'N DIST.:								
Totals	.....	215	.....	41	19.2	150.00	1	3
WATERTOWN	*12,200	21	20.65	7	33.3	190.52	0	1
Ellisburgh	4,811	5	12.50	....	....	200.00	0	0
Clayton	4,314	3	8.38	1	33.3	.....	0	0
OGDENSBURG	*12,000	20	20.00	4	20.0	350.00	0	0
Potsdam	*4,000	3	9.00	....	....	.....	0	0
Malone	*9,000	9	12.00	3	33.3	111.11	0	0
Plattsburgh	*7,000	4	.....	2	50.0	.....	0	0
Glens Falls	*10,000	8	9.60	5	62.5	500.00	0	0
Whitehall	*4,000	6	18.00	2	33.3	.....	0	0
Fort Edward	*5,000	7	16.80	2	28.0	285.72	0	0
Fort Ann	4,267	4	.....	....	....	.....	0	0
Argyle	3,700	1	...	....	....	.....	0	0
Salem	3,500	3	10.26	...	....	.....	0	0
Greenwich	*4,000	1	.....	....	....	.....	0	0
Rest of district	.....	120	.....	15	12.5	91.65	1	2
MOHAWK VALLEY DISTRICT:								
Totals	.....	457	.....	135	29.4	247 25	2	12
SCHENECTADY	*20,000	55	33.00	25	45.5	472.85	0	2
Schoharie	3,350	2	.....	....	....	.....	0	0
Cobleskill	3,371	6	21.18	1	16.7	166.67	0	0
AMSTERDAM	*20,000	20	12.00	3	15.0	200.00	0	0
Fort Plain	3,500	5	17.14	....	....	200.00	0	1
Johnstown	*6,000	9	18.00	3	33.3	111.11	0	0
GLOVERSVILLE	*13,845	24	20 80	11	45.6	250.00	0	0
Little Falls	*8,500	18	25.40	5	26.7	388.89	0	1
Herkimer	*3,000	4	16.00	1	25.0	250.00	0	0
Ilion	*4,200	3	8.57	1	33 3	333.33	0	0
UTICA	*44,000	86	23.41	41	47.6	406 90	0	0
Whitestown	*5,000	4	9.60	...	....	.....	0	0
ROME	12,045	19	19.00	7	36.0	338.75	0	0
Boonville	*4,000	3	9.00	....	....	.....	0	0
Camden	3,400	3	10.60	....	....	.....	0	0
Waterford	*5,400	16	35.55	10	62.5	250.00	0	0
Ballston Spa	3,200	3	11.25	1	33.3	.....	0	0
Saratoga Springs	*10,000	20	24.00	5	25.0	200 00	0	0
Rest of district	.....	157	.....	21	13.4	120.00	2	1
SOUTHERN TIER DISTRICT:								
Totals	.....	298	.....	80	26.7	315.80	0	2
BINGHAMTON	*30,000	50	20.00	15	30.0	110.00	0	0
Owego	*6,000	7	14.00	1	14.3	287.14	0	0
Candor	4,323	3	8.40	1	33.3	333.33	0	0
Waverly	*5,000	10	24.00	...	...	.....	0	0
ELMIRA	*25,000	53	25.44	26	49.0	400.00	0	0
HORNELLSVILLE	*10,000	17	20.40	6	29.4	235.40	0	1
Bath	3,500	5	17.14	....	....	.....	0	0
CORNING	*8,000	17	25.75	7	41.2	294.10	0	0
Olean	*8,000	18	27.00	13	72.2	666.66	0	0
Salamanca	*6,000	1	.....	...	....	.....	0	0
JAMESTOWN	*15,838	16	.....	5	30.0	62.50	0	0
Westfield	3,000	5	20.00	....	....	.....	0	0
Fredonia	*3,000	3	12.00	....	....	.....	0	0
Rest of district	.....	93	.....	6	66.0	86.00	0	1

FOR JULY—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	2	1	1	3	3	45	16	25	4	27	17	19	37	7	23	23	10
2	0	0	0	0	1	5	17	16	26	2	20	11	12	27	5	16	24	26
0	0	0	0	0	0	0	3	2	1	0	3	0	3	1	0	1	4	2
1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	1	0	0	0	2	4	3	1	0	0	0	0	2	1	0	0	6
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0
0	0	0	0	0	1	0	0	0	2	0	1	1	0	2	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1
1	0	0	0	0	0	1	2	1	1	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	2
0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	2	6	9	15	1	12	9	6	17	3	11	13	13
7	0	2	3	0	2	14	75	23	43	1	35	18	36	54	22	31	43	34
4	0	0	0	0	0	0	13	2	7	0	6	1	1	8	0	2	0	2
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	1	1
0	0	0	1	0	0	0	3	1	3	0	1	1	4	1	1	2	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	2	1	2
0	0	0	0	0	0	2	4	1	1	0	2	2	2	3	0	2	2	3
0	0	0	0	0	0	1	5	1	2	0	2	0	1	1	1	2	0	1
0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0
1	0	1	0	0	0	3	30	4	9	0	5	1	7	5	3	4	3	10
0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0
0	0	0	1	0	0	0	4	3	1	0	0	1	0	2	0	0	4	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	1	3	1	1	0	1	0	1	6	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	4	1	2	0	1	2	0	2	1	1	3	3
1	0	1	1	0	2	3	8	8	11	1	13	9	16	24	15	13	22	6
2	0	1	1	0	5	8	46	23	16	2	26	6	30	33	9	34	29	25
0	0	0	0	0	0	1	10	4	5	0	4	2	5	10	2	2	3	2
1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	4	1	3
1	0	1	0	0	1	4	14	8	1	0	1	0	0	4	2	6	1	9
0	0	0	0	0	1	0	2	1	1	0	0	0	2	5	1	0	1	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	1	0
0	0	0	0	0	1	0	4	1	2	0	4	0	0	0	0	3	1	1
0	0	0	0	0	0	1	11	0	1	0	3	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	1	0	0	0	0	1	1	0	2	0	1	2	0	3	3	2
0	0	0	0	0	0	0	0	0	1	0	2	0	1	1	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	0	0	1	2	4	8	4	2	9	3	18	7	2	12	14	6

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of population.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	417	.....	129	30.9	207.14	6	2
SYRACUSE	*57,000	174	24.03	90	51.7	372.80	2	0
Baldwinsville	2,500	1	4.80	....	....	....	0	0
Cortland	*2,520	13	17.11	3	23.0	53.33	0	0
Homer	*2,100	3	12.00	....	....	....	0	0
Oneida	*5,000	7	16.80	4	57.1	142.85	0	0
Hamilton	*4,000	3	9.00	....	....	.....	0	0
Canastota	4,253	3	8.00	....	....	.....	0	0
Brookfield	2,695	6	19.45	1	16.9	166.67	0	0
Norwich	5,500	8	17.45	....	....	.....	0	0
Oneonta	*7,000	9	15.43	2	22.2	.....	0	0
Worcester	*2,000	2	8.00	....	....	.....	0	0
Cooperstown	*4,000	3	12.00	1	33.3	.....	0	0
Walton	3,540	3	10.16	....	....	.....	0	0
Delhi	2,000	4	16.00	....	....	.....	0	0
Rest of district	.....	179	.....	28	16.7	197.01	2	0
WEST CENTRAL DISTRICT:								
Totals	.....	253	.....	34	13.4	126.90	3	1
AUBURN	*26,000	44	20.30	9	20.5	159.10	1	0
ITHACA	*9,500	7	.....	3	41.4	285.71	0	0
Waterloo	*4,500	2	.....	1	50.0	.....	0	0
Seneca Falls	*5,000	7	14.00	2	28.5	.....	0	0
Geneva	*6,500	13	26.00	5	38.4	230.72	0	0
Manchester	*4,000	8	24.00	1	12.5	.....	0	0
Phelps	*7,000	6	13.35	2	33.0	.....	0	0
Penn Yan	*4,500	7	18.67	2	28.5	142.82	0	0
Batavia	*7,000	5	.....	1	20.0	.....	0	0
Dansville	3,700	3	10.80	....	....	.....	0	0
Rest of district	.....	149	.....	9	6.5	113.25	2	1
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	1,019	.....	479	47.5	304.20	15	14
BUFFALO	*250,000	†494	25.69	302	61.1	365.30	12	4
Tonawanda	*5,000	13	31.20	8	61.5	307.56	0	0
Amherst	4,578	4	10.42	3	75.0	250.00	0	0
LOCKPORT	*15,000	12	.....	4	33.3	166.67	0	0
Niagara	*7,000	6	10.28	2	40.0	333.33	0	0
Medina	4,000	6	18.00	1	16.9	333.33	1	0
Albion	*5,000	7	16.80	....	....	....	0	0
Brockport	4,500	3	.....	1	33.3	333.33	0	0
ROCHESTER	*130,000	233	20.54	106	47.5	345.00	0	6
Palmyra	*4,800	4	10 00	....	....	.....	0	0
Newark	3,500	4	13.72	....	....	.....	0	0
Lyons	*5,000	4	8.00	2	50.0	.....	0	0
Clyde	*3,000	6	24.00	3	50.0	166.67	0	0
OSWEGO	*24,000	23	11.50	6	25.8	129.90	0	0
Fulton	*4,000	8	24.00	1	12.5	.....	0	0
Richland	4,000	3	.....	....	....	.....	0	0
Rest of district	.....	199	.....	38	19.0	160.60	2	3
Totals for the State	.....	11,083	.....	5,602	50.5	327.37	34	26
Average for July for past five yrs.	.....	10,995	.....	5,411	52.8	239.58	43	86

† For four weeks

REMARKS.—July has uniformly the largest death rate of any month in the year; the average number of tality is also highest in July, more than half of the deaths being of children under 5 years of age, the average average, but is much higher than in June. From zymotic diseases, the proportion of deaths is lower than diarrhœal diseases, which have been the cause of nearly eighty per cent of the zymotic mortality during more than twenty-five per cent of all the deaths are from diarrhœal diseases, which is lower than the ing an aggregate population of 2,483,000; 285 in 106 large villages having a population of 492,000, and the Glens Falls; the number of deaths from it is less than in June. A few deaths have been reported as due to Hudson and has caused a considerably increased death rate in numerous localities. Five deaths occurred deaths from diseases of the digestive and nervous systems.

FOR JULY — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	0	0	0	0	5	5	68	18	44	0	38	19	26	51	23	28	42	41
1	0	0	0	0	4	3	52	4	22	0	11	7	7	21	6	8	9	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	1	0	2	0	1	0	1	2	0	2	1	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	2	0	1	0
0	0	0	0	0	0	0	0	0	1	0	1	2	2	2	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	2	1	1	1	2	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
1	0	0	0	0	1	2	13	12	14	0	20	7	12	23	11	16	24	21
1	0	0	2	0	4	2	17	12	37	1	23	16	32	26	4	20	34	17
0	0	0	0	0	0	0	6	2	9	0	4	2	4	4	0	3	2	7
0	0	0	0	0	2	0	0	0	2	0	1	0	0	2	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	2	0	0	0	2	1	0	1	0	0
0	0	0	1	0	0	0	2	0	2	0	1	2	0	0	0	1	1	3
0	0	0	0	0	0	0	0	2	1	0	2	0	2	0	0	0	1	0
0	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0	3	0
0	0	0	0	0	1	0	0	1	0	0	1	1	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
1	0	0	1	0	1	2	9	3	19	1	11	10	22	16	4	14	25	6
3	0	3	10	1	3	14	243	64	82	3	104	29	47	119	27	74	45	120
1	0	0	7	1	1	6	148	31	28	1	67	13	16	54	12	26	0	66
0	0	1	0	0	0	0	3	1	0	0	2	0	0	1	0	1	1	3
0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1
0	0	0	1	0	0	0	1	4	0	1	2	0	2	0	0	1	0	0
0	0	0	0	0	0	0	2	0	1	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	0	1
0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0
0	0	1	0	0	2	3	65	11	21	1	8	5	9	30	5	16	16	24
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2
0	0	0	0	0	0	0	3	3	3	0	0	1	3	2	1	3	1	3
0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	1	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2	0	1	1	0	0	5	18	12	26	0	19	10	14	22	8	20	24	12
55	....	45	91	12	129	290	2,864	706	1,017	60	1,024	497	543	1,092	242	553	395	1,318
65	6	83	77	15	84	352	3,079	521	953	78	723	389	461	1,035	200	400	518	1,078

ending July 26.

reported deaths per month for the past five years being 7,866, that of July has been 10,252. The infant mor- of the rest of the year being about one-third. For July of this year the infant mortality is a little below the the average for July, which is the highest of any month in the year on account of the large mortality from July for the past five years; the proportion is about the same during this month. For this month a little average by about five per cent. Of the 2,864 deaths from this cause, 2,393 occurred in twenty-six cities hav- remainder in the rural parts of the State. Diphtheria is reported as prevalent at Malone and abating in part to epidemic influenza. No small-pox exists anywhere in the State. Whooping cough is prevalent at during the month from lightning stroke. There is, as usual, a considerable increase in the number of

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in italics, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under five years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	5,896	.....	2,933	49.8	248.00	15	72
NEW YORK CITY	*1,621,336	9,232	24.05	1,801	48.4	277.00	11	49
BROOKLYN	*822,467	1,807	26.13	949	52.6	295.00	6	13
Gravesend	*5,913	25	.....	15	60.0	480.00	0	0
New Utrecht	*5,000	22	.....	11	50.0	272.72	0	0
Flatbush	8,000	14	21.00	7	50.0	428.57	0	0
LONG ISLAND CITY	*40,000	84	16.80	38	44.4	369.37	1	0
Newtown	*20,000	37	44.40	17	45.9	378.37	1	1
Oyster Bay	*12,000	24	34.00	11	50.0	375.00	0	0
Hempstead	18,100	18	12.00	4	22.2	166.67	0	0
North Hempstead	8,000	18	27.00	5	27.8	222.22	0	0
Jamaica	10,080	15	.....	7	46.6	266.67	0	0
Flushing	16,000	30	22.50	6	20.0	233.33	0	2
Southold	7,500	17	27.20	4	23.5	294.95	0	1
Sag Harbor	*3,000	5	20.00	3	60.0	200.00	0	0
Huntington	9,100	8	12.00	2	37.5	375.00	0	0
New Brighton	*15,000	31	24.80	13	42.0	260.00	0	1
Edgewater	12,000	26	26.00	3	11.5	153.83	0	0
Port Richmond	*2,650	2	6.67	....	...	.....	0	0
Westfield	7,000	12	20.57	2	16.6	166.66	0	0
YONKERS	*21,943	52	19.50	27	51.9	423.94	0	1
Westchester	*7,000	12	20.57	6	50.0	500.00	0	0
Mount Vernon	*11,000	22	24.00	11	32.0	300.00	0	2
Portchester	*5,583	11	23.57	6	54.5	545.45	0	0
Sing Sing	*6,500	10	21.43	4	40.0	200.00	0	0
New Rochelle	*6,000	9	18.00	2	22.2	111.11	0	0
Peekskill	*7,000	16	27.43	8	50.0	125.00	0	1
Rest of district	.....	267	.....	83	31.0	234.62	3	1
HUDSON VALLEY DISTRICT: Totals	.....	983	.....	350	35.7	264.85	6	23
ALBANY	*103,000	196	22.83	59	30.0	210.50	2	7
COHOES	*20,000	41	24.60	24	59.2	250.00	0	0
TROY	*65,000	127	23.44	50	39.4	348.00	0	7
West Troy	*13,000	27	24.92	10	30.0	296.53	0	1
Green Island	*5,000	10	20.00	5	50.0	600.00	0	1
Lansingburgh	*10,600	22	.....	8	36.4	182.82	0	1
Hoosick Falls	*6,000	10	20.00	7	70.0	300.00	0	0
Greenbush	*8,000	22	33.00	12	54.5	272.72	0	1
Coxsackie	4,000	8	24.00	2	25.0	250.00	0	1
Catskill	*4,200	6	14.60	3	50.0	500.00	0	0
HUDSON	*13,000	15	13.86	8	53.6	400.00	0	0
KINGSTON	*21,000	45	25.71	16	35.5	333.33	0	0
Ellenville	3,000	1	4.00	1	.....	.....	0	0
Marbletown	4,000	3	9.00	2	66.6	.....	0	0
Esopus	4,736	8	20.25	4	50.0	375.00	0	0
Saugerties	*4,000	6	18.00	2	33.3	166.67	0	0
POUGHKEEPSIE	*20,200	34	20.20	18	51.0	255.00	0	0
Fishkill	10,732	19	22.00	6	32.0	300.00	0	0
Wappinger Falls	*5,600	3	5.00	1	50.0	500.00	0	0
NEWBURGH	*20,000	20	12.00	5	25.0	200.00	2	0
Port Jervis	*9,500	16	20.20	4	25.0	125.00	1	0
Middletown	*10,000	20	24.00	13	65.0	350.00	0	0
Goshen	*4,500	7	18.67	2	28.5	142.85	0	0
Haverstraw	*7,000	.....	.....	....	....	.....	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during August, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
57	....	25	58	6	105	170	1,168	509	651	39	475	289	278	636	132	288	117	806
23	0	14	45	6	57	92	626	321	413	24	254	172	151	251	72	189	38	524
15	0	10	12	0	43	63	377	157	165	12	171	69	83	295	43	63	32	184
0	0	0	0	0	1	0	11	1	3	0	0	3	0	2	0	2	0	2
0	0	0	1	0	0	0	5	2	1	0	1	1	4	1	1	1	0	4
2	0	0	0	0	1	0	3	0	0	0	3	0	1	1	1	0	0	2
5	0	0	0	0	2	2	10	2	4	0	4	4	0	6	0	4	2	8
2	0	0	0	0	0	2	8	0	3	0	1	3	1	7	0	2	1	5
1	0	0	0	0	0	0	8	2	1	0	0	0	3	3	1	3	0	2
1	0	0	0	0	0	1	1	0	0	0	3	2	1	4	1	1	0	3
1	0	0	0	0	0	0	3	0	3	0	1	0	1	3	2	0	3	1
0	0	0	0	0	1	1	2	0	1	1	0	1	0	2	0	1	3	2
1	0	0	0	0	0	1	3	3	3	0	2	1	1	3	1	5	0	4
2	0	0	0	0	0	1	6	1	0	0	0	0	1	0	0	1	2	2
0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1
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0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
0	0	0	0	0	0	0	2	0	3	0	1	1	2	1	0	0	1	1
0	0	1	0	0	0	0	20	3	6	0	1	0	2	5	3	1	1	8
0	0	0	0	0	0	1	5	0	3	0	0	2	0	0	0	1	0	0
0	0	0	0	0	0	0	6	2	0	0	0	1	1	4	0	1	2	3
0	0	0	0	0	0	0	6	0	1	0	0	2	0	0	0	0	0	2
0	0	0	0	0	0	0	2	1	1	0	2	1	0	0	0	0	2	1
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0	0	0	0	0	0	0	1	1	2	0	1	1	0	1	0	0	3	5
3	0	0	0	0	0	3	51	10	31	0	22	18	21	35	7	11	21	31
7	....	1	1	....	17	12	192	43	92	6	102	44	73	142	19	49	67	87
0	0	0	0	0	2	4	27	14	25	0	21	8	18	30	5	8	7	18
0	0	0	0	0	3	0	7	1	5	0	2	1	0	6	2	4	1	9
0	0	0	1	0	1	1	35	7	14	1	12	7	5	15	1	2	8	10
0	0	0	0	0	1	2	4	2	2	0	3	1	2	3	0	5	0	1
0	0	0	0	0	0	0	5	0	1	0	0	0	1	1	0	1	0	0
0	0	0	0	0	1	0	2	2	1	1	1	2	0	5	0	4	0	2
0	0	0	0	0	0	1	2	0	0	0	1	0	0	2	1	1	1	1
1	0	0	0	0	0	0	4	0	1	0	7	0	3	2	0	0	0	3
0	0	0	0	0	0	0	1	0	1	0	1	1	1	0	0	0	1	1
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0	0	0	0	0	3	0	3	2	0	0	1	1	0	4	0	1	0	0
2	0	0	0	0	2	0	11	4	7	1	2	3	5	3	0	1	4	0
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0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	1	1	0	1
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0	0	0	0	0	1	0	8	1	2	0	4	0	0	8	1	1	3	5
0	0	0	0	0	0	0	3	0	1	0	5	0	2	5	0	3	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	2	0	1	0	3	1	1	4	1	1	1	3
1	0	0	0	0	0	0	0	0	2	0	3	2	4	1	0	2	0	0
0	0	0	0	0	0	0	7	0	1	0	0	0	0	3	0	2	2	5
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Nyack	*5,000	.....	.....	....	....	.....	0	0
Ramapo	*5,000	5	12.00	2	40.0	400.00	1	0
Rest of district	.....	312	.....	86	27.7	240.00	0	4
ADIROND'CK & NORTH'N DIST:								
Totals	.....	314	.....	97	30.8	278.85	0	6
WATERTOWN	*12,200	24	23.60	13	54.2	416.66	0	0
Ellisburgh	4,811	3	.....	....	....	.....	0	0
Cape Vincent	3,143	1	.....	....	....	.....	0	0
Clayton	4,314	11	30.55	5	45.5	363.63	0	0
OGDENSBURG	*12,000	22	22.00	11	50.0	454.54	1	0
Potsdam	*4,000	4	12.00	1	25.0	250.00	0	0
Malone	*9,000	13	14.00	6	46.1	384.61	0	0
Plattsburgh	*7,000	9	15.43	2	22.2	222.22	0	0
Crown Point	4,287	5	14.00	2	40.0	400.00	0	0
Glens Falls	*10,000	19	22.80	7	36.8	368.40	0	0
Whitehall	*4,000	8	24.00	3	37.5	375.00	0	0
Fort Edward	*5,000	2	.....	1	....	.....	0	0
Fort Ann	4,267	2	.....	....	....	.....	0	0
Argyle	3,700	1	.....	....	....	.....	0	0
Salem	3,500	6	20.57	1	16.7	166.67	0	0
Greenwich	*4,000	10	30.00	3	30.0	500.00	0	2
Rest of district	.....	174	.....	42	24.2	189.85	0	4
MOHAWK VALLEY DISTRICT:								
Totals	.....	527	.....	196	38.8	426.25	7	23
SCHENECTADY	*20,000	61	36.60	29	46.7	322.56	0	6
Cobleskill	3,371	6	21.36	2	33.3	333.33	0	1
AMSTERDAM	*20,000	28	16.80	15	53.5	835.71	0	2
Fort Plain	3,500	8	27.43	4	50 0	.....	0	0
Johnstown	*6,000	6	12.00	4	66.6	166.67	0	0
GLOVERSVILLE	*13,845	26	22.60	12	46.2	500.00	0	2
Little Falls	*8,500	17	24.00	12	70.6	647.00	0	0
Herkimer	*3,000	4	16.00	1	25.0	250.00	0	0
Ilion	*4,200	5	14.30	2	40.0	400.00	0	0
UTICA	*44,000	92	25.09	30	32.6	347.95	3	0
Whitestown	*5,000	7	16.80	4	57.1	428.57	0	0
ROME	12,045	29	28.76	20	69.0	551.70	1	0
Boonville	*4,000	6	18.00	2	33.3	333.33	0	0
Camden	3,400	1	.....	....	....	.....	0	0
Waterford	*5,400	4	.....	....	....	.....	0	0
Ballston Spa	3,200	4	15.00	3	....	.....	1	1
Saratoga Springs	*10,000	44	.....	12	27.3	214.54	1	0
Rest of district	.....	179	.....	44	24.5	300.00	1	11
SOUTHERN TIER DISTRICT:								
Totals	.....	372	.....	138	37.0	311.60	2	7
BINGHAMTON	*30,000	51	20.40	19	38.0	260.00	0	0
Owego	*6,000	6	12.00	2	33.3	333.33	0	0
Candor	4,323	4	11.20	....	...	500.00	0	1
Waverly	*5,000	7	16.80	2	28.5	428.57	0	0
ELMIRA	*25,000	58	23.84	33	56.9	448.30	0	1
HORNELLSVILLE	*10,000	20	24.00	7	35.0	400.00	1	1
Bath	3,500	8	27.44	1	12.5	.....	0	0
Corning	*8,000	18	27.00	5	27.7	333.33	0	1
Olean	*8,000	21	31.50	15	71.4	523.80	0	1
JAMESTOWN	*15,000	20	16.00	14	70.0	200.00	1	0
Westfield	3,000	1	4.00	....	....	.....	0	0
Fredonia	*3,000	2	8.00	...	....	.....	0	0
Rest of district	.....	156	.....	40	25.7	268.85	0	2

FOR AUGUST — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
2	0	1	0	0	1	3	61	8	25	2	35	17	31	48	5	12	35	22
1	0	1	0	1	0	11	63	9	32	6	25	15	25	28	9	17	31	33
0	0	0	0	0	0	1	9	0	3	0	0	1	4	2	0	0	1	3
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
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0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	2	3	0	0	0	0	0	0	4	0	0	1	3
0	0	0	0	0	0	0	2	0	1	0	2	1	1	0	0	0	1	1
0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	2	5	1	0	2	2	1	2	2	1	0	0	1
0	0	0	0	0	0	0	3	1	1	0	0	0	1	0	0	1	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
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0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	2	0
0	0	0	0	1	0	0	2	1	1	0	1	1	0	0	0	0	0	1
1	0	1	0	0	0	6	21	4	21	4	18	8	11	18	5	14	21	17
4	....	2	4	1	4	13	126	30	33	4	51	23	34	59	16	28	24	41
2	0	0	0	0	4	0	7	2	1	1	7	1	4	14	0	4	1	7
0	0	0	0	0	0	0	1	0	0	0	0	2	0	1	0	1	0	0
0	0	0	0	0	0	1	12	2	3	0	2	1	1	0	1	1	0	2
0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	3
0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	0	1	0	1
0	0	1	1	0	0	0	9	0	3	0	2	1	2	1	2	1	0	1
0	0	0	0	0	0	1	10	1	0	0	1	0	0	1	0	1	1	1
0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0
0	0	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	1	0
0	0	1	0	0	0	4	24	9	9	3	3	5	6	11	4	4	2	4
0	0	0	0	0	0	0	3	1	0	0	1	0	0	0	0	0	1	1
0	0	1	0	0	0	4	10	4	0	0	4	0	0	2	0	0	0	3
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0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	2	1	0	1	36	5	15	0	23	6	17	17	6	12	13	11
5	0	0	1	1	11	1	91	12	31	5	34	9	25	46	11	15	35	30
0	0	0	1	1	0	0	11	4	12	1	5	1	1	5	0	1	4	4
0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0
0	0	0	0	0	1	1	1	0	0	0	1	0	1	0	1	0	1	0
0	0	0	0	0	1	0	24	0	3	0	3	0	2	10	2	1	1	10
0	0	0	0	0	4	0	4	0	0	0	1	1	2	0	0	2	3	1
0	0	0	0	0	0	0	0	2	1	0	0	1	1	0	1	0	0	2
1	0	0	0	0	0	0	4	1	0	0	1	1	0	4	0	2	3	0
0	0	0	0	0	0	0	10	0	0	0	2	0	1	4	0	0	0	3
0	0	0	0	0	0	0	3	1	0	1	10	0	1	0	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4	0	0	0	0	5	0	31	4	12	2	11	5	16	21	7	9	21	6

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	426	.....	163	38.2	300.00	2	7
SYRACUSE	*87,000	174	23.58	97	57.0	400.00	0	3
Baldwinsville	3,000	1	.....	1	....	.....	0	0
Skaneateles	4,866	4	10.00	0	....	.....	0	0
Cortland	*9,000	8	.....	4	50.0	250.00	0	0
Homer	*3,000	4	16.00	1	25.0	.....	0	0
Oneida	*6,618	9	18.00	3	33.3	111.11	0	0
Hamilton	*4,000	4	12.00	2	50.0	250.00	0	0
Canenovia	4,323	7	19.00	4	57.4	571.43	0	0
Brookfield	3,685	3	10.00	0	....	.....	0	0
Norwich	5,500	8	17.45	4	50.0	750.00	1	1
Oneonta	*7,000	8	13.71	2	25 0	250.00	0	1
Worcester	*3,000	5	20.00	0	....	.....	0	0
Cooperstown	*3 000	2	8.00	1	50.0	500.00	0	0
Walton	3,540	4	13.56	2	50.0	500.00	0	0
Delhi	3,000	2	8.00	0	....	.....	0	1
Rest of district	.....	186	.....	42	22.5	215.00	1	1
WEST CENTRAL DISTRICT:								
Totals	.....	274	.....	75	27.4	244.50	0	1
AUBURN	*26,000	46	21.23	8	17.4	239.17	0	0
ITHACA	*10,000	16	19.20	5	31.2	250.00	0	0
Waterloo	*4,500	7	18.67	3	42.8	428 57	0	0
Seneca Falls	*6,000	12	24.00	5	41.7	250.00	0	0
Geneva	*6,000	21	42.00	13	64.6	523.80	0	0
Canandaigua	*6,300	5	.....	2	....	.....	0	0
Manchester	*4,000	8	24.00	1	12.5	.....	0	0
Phelps	*7,000	6	10.43	2	33.3	333.33	0	0
Penn Yan	*4,500	5	13.33	0	...	.....	0	0
Dansville	3,700	7	22.70	2	28.5	142.85	0	0
Rest of district	.....	141	.....	34	24.3	207.15	0	1
LAKE ONT. AND WEST'N DIST.:								
Totals	.....	1,210	.....	628	51.0	338.00	14	23
BUFFALO	*257,000	†680	27.52	414	60.8	377.20	13	15
Tonawanda	*5,000	21	50.40	10	47.6	380.95	0	3
Amherst	4,378	11	28.80	1	9.1	91.20	0	0
LOCKPORT	*15,000	13	.....	7	53.8	307.70	0	0
Niagara	*7,000	5	.....	3	...	.....	0	0
Medina	4,000	5	15.00	2	40.0	600.00	0	0
Albion	*5,000	13	31.20	7	53.8	461.53	0	0
Brockport	4,500	7	18.67	3	42.8	428.57	0	0
ROCHESTER	*130,000	212	19.54	112	52.8	410.38	0	3
Palmyra	*4,800	4	10.00	1	25.0	.....	0	0
Newark	3,500	7	24.00	2	28.5	.....	0	0
Lyons	*6,000	7	14.00	3	42.8	142.85	0	0
Clyde	*3,000	9	36 00	2	22.2	.....	0	0
OSWEGO	*24,000	35	17.50	11	31.4	285.71	0	1
Richland	4,000	1	.....	0	...	.....	0	0
Rest of district	.....	180	.....	50	27.8	161.11	1	1
Totals for the State	.....	10,002	.....	4,480	48.8	292.70	47	162
Average for Aug. for past five years	.....	8,572	.....	3,955	45.5	330.27	39	160

† For five weeks

REMARKS.—During the month of August 10,002 deaths have been reported. This is 1,080 less than in July, in August, 1886, and 1,430 more than the average for August for the five years preceding the present. The month per 1,000 population of 21.80. Of the 10,002 deaths 6,227 are reported from five cities whose aggregate There were 1,660 deaths in the small towns not specified in the bulletin. Of the mortality 48.8 per cent higher than the average for August, and two per cent lower than in July. In each thousand deaths 292.70 average for August for the preceding five years. The mortality from diarrhœal diseases is about the same 1,300, or nearly sixty per cent, occurred in the five large cities. Typhoid fever caused 162 deaths, just the tricts show this increase except the West Central. There were sixty less deaths from diphtheria in August. death rates; other zymotic diseases are below the average. One death from lightning stroke has been

FOR AUGUST — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	....	1	....	1	4	3	108	12	34	3	33	16	38	40	12	23	40	47
0	0	0	0	1	1	3	60	4	15	2	3	3	13	18	2	10	3	30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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0	0	0	0	0	1	0	1	0	0	0	1	1	0	2	0	1	0	1
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0	0	0	0	0	0	0	1	0	0	0	1	0	2	1	1	1	0	2
0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1
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0	0	0	0	0	1	0	3	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	1	0	1	0	2	2	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0
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0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0
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2	0	1	0	0	0	0	35	7	15	0	23	11	18	14	6	11	31	10
....	....	3	....	....	4	2	57	5	33	1	21	18	20	33	14	16	28	18
0	0	2	0	0	0	0	9	0	11	0	3	5	1	0	4	5	3	3
0	0	0	0	0	2	0	2	0	4	0	1	0	1	2	3	0	0	1
0	0	0	0	0	0	0	3	0	1	0	0	0	1	0	0	0	2	0
0	0	0	0	0	0	0	3	0	1	0	0	1	1	2	0	0	2	2
0	0	0	0	0	0	0	11	0	2	1	2	0	0	3	0	1	0	1
0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	1	0
0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	1	1	1
0	0	0	0	0	1	0	1	0	0	0	1	0	0	2	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	1	2	1	0	0	0	0
0	0	0	0	0	0	0	1	1	0	0	2	0	1	0	0	0	1	1
0	0	1	0	0	1	2	24	3	11	0	12	11	12	22	6	8	18	9
10	....	1	5	1	4	18	334	46	101	6	130	28	44	141	23	76	33	172
5	0	0	5	0	3	16	200	24	51	4	92	10	15	60	12	38	0	117
0	0	0	0	0	0	0	5	1	2	0	2	0	0	2	1	0	0	5
0	0	0	0	0	0	1	0	1	1	0	1	0	2	3	1	0	0	1
0	0	0	0	0	0	0	4	1	0	0	1	2	1	1	0	0	1	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	3
0	0	1	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0
1	0	0	0	0	0	0	5	1	0	0	1	0	1	1	2	0	0	1
0	0	0	0	0	0	0	3	0	1	0	0	0	0	2	0	0	0	1
2	0	0	0	0	1	1	80	10	19	1	7	8	3	32	4	13	12	16
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1
0	0	0	0	0	0	0	1	0	0	0	1	1	0	2	0	1	0	1
0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	2	0	2
0	0	0	0	0	0	0	0	0	1	0	2	1	0	2	1	1	1	0
0	0	0	0	1	0	0	8	0	5	0	1	3	2	8	0	2	3	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2	0	0	0	0	0	0	25	8	20	0	22	3	16	27	2	17	15	21
86	....	34	69	11	149	230	2,139	666	1,007	70	871	442	537	1,125	236	512	375	1,234
90	2	66	38	13	118	308	1,946	495	933	63	590	367	422	824	205	326	512	1,034

ending August 30.
and 630 more than in August, 1889, which was an unusually healthy month; the number is about the same as
population of the reporting portions of the State is about 5,400,000; this makes an annual death rate for the
population is 2,974,000, and their death rate 24.60, that of the remaining portion of the State being 18.20.
occurred under the age of five years, which is higher by eight per cent than in August, 1889, three per cent
occurred from zymotic diseases, being thirty-five lower than that of July and thirty-seven lower than the
as the average for August, having fallen four per cent from that of July. Of the 2,139 deaths from this cause,
average for the past five years for August, being an increase of fifty-eight over July; all the sanitary dis-
than in July and sixty-eight less than the August average. Whooping cough and measles show increasing
reported.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	.....	5,105	.....	2,269	44.5	223.50	8	36
NEW YORK CITY	*1,631,395	2,882	21.50	1,285	44.5	222.75	7	34
BROOKLYN	*852,467	1,549	23.10	779	50.3	219.36	0	16
Gravesend	*6,912	11	19.13	5	45.5	363.63	0	0
New Utrecht	*5,000	22	52.80	5	22.7	226.36	0	0
Flatbush	8,000	14	21.00	8	57.1	142.85	0	0
LONG ISLAND CITY	*40,000	64	19 20	34	55.1	281.25	0	2
Newtown	*10,000	32	38.40	18	59.4	187.50	0	0
Oyster Bay	*12,000	14	.....	3	...	.....	0	1
Hempstead	18,160	34	22.41	11	32.3	147.05	0	1
North Hempstead	8,000	13	19.50	5	38.5	230.77	0	0
Jamaica	10,089	29	34.45	9	31.0	134.50	0	0
Flushing	16,000	20	15.00	8	40.0	100.00	0	1
Southold	7,500	20	34.00	3	15.0	500 00	0	0
Sag Harbor	*3,000	12	48.00	5	41.7	250.00	0	0
Huntington	8,100	11	16.48	5	45.5	363.63	0	0
New Brighton	*15,000	27	21.60	6	22.2	111.11	0	0
Edgewater	12,000	26	26.00	6	27.0	135.00	0	0
Port Richmond	*3,600	3	10.00	2	66.6	333.33	0	0
Westfield	7,000	7	12.00	0	....	285.71	0	0
YONKERS	*31,949	44	16.51	19	42.9	250.00	0	1
Westchester	*7,000	15	26.00	7	50.0	214.28	0	0
Mount Vernon	*11,000	18	19.64	5	27.7	222.22	0	1
Portchester	*5,583	5	10.73	4	80.0	600.00	0	0
Sing Sing	*6,500	10	18.46	4	40.0	100.00	0	1
New Rochelle	*6,000	11	22.00	4	36.3	91.90	0	0
Peekskill	*7,000	13	24.28	3	23.1	230.70	0	0
Rest of district	.....	199	.....	38	18.7	150.00	1	7
HUDSON VALLEY DISTRICT:								
Totals	.....	810	.....	231	28.5	197.53	8	20
ALBANY	*103,000	143	16.66	40	28.0	251.71	0	6
COHOES	*20,000	19	.....	8	....	.....	0	1
TROY	*65,000	114	21.04	40	35.0	228.07	1	3
West Troy	*13,000	18	16.62	5	27.8	222.22	0	1
Green Island	*6,000	6	12.00	2	33.3	.....	0	0
Lansingburgh	*10,000	4	...	2	....	.....	0	1
Hoosick Falls	*6,000	8	16 00	3	37.5	250.00	0	1
Greenbush	*8,000	15	22.50	7	43.3	250.00	2	1
Coxsackie	4,000	2	6.00	0	....	.....	0	0
Catskill	*4,230	3	.....	0	....		0	0
HUDSON	*13,000	12	10.77	7	58.3	166.69	0	0
KINGSTON	*21,000	28	16.00	7	25.0	214.28	2	0
Ellenville	3,000	7	28.00	4	57.1		0	0
Marbletown	4,000	5	15.00	2	40.0	400.00	0	0
Esopus	4,736	10	25.33	5	50.0	400.00	0	0
Saugerties	*4,000	4	12 00	2	50.0	250.00	0	0
POUGHKEEPSIE	*20,200	44	26.13	13	29.6	68.10	0	0
Fishkill	10,732	16	18.60	7	42.5	62.50	0	0
Wappinger Falls	*5,000	3	7.20	0	....	.....	0	0
NEWBURGH	*20,000	19	.....	8	...	.....	0	0
Port Jervis	*9,500	12	15.15	3	25.0	.....	0	0
Middletown	*10,000	18	21.60	7	38.9	55 55	0	0
Goshen	*4,500	4	.....	....	...	.....	0	0
Haverstraw	*7,000	12	20.57	3	25.0	333.33	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during September, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
57	0	24	26	9	79	155	660	504	672	22	452	275	250	468	132	218	130	869
16	0	15	20	5	50	85	380	292	424	14	243	162	133	218	81	145	41	487
21	0	6	5	4	23	53	212	170	174	5	149	79	74	164	30	41	36	287
0	0	0	0	0	0	1	3	2	1	0	1	0	0	1	0	1	0	1
0	0	0	1	0	0	2	2	0	2	1	2	1	0	4	0	5	1	1
0	0	0	0	0	0	0	2	0	3	0	3	0	0	3	0	0	0	3
2	0	1	0	0	1	0	12	6	2	0	5	4	1	4	0	3	3	18
0	0	0	0	0	0	1	5	1	1	2	3	0	0	7	1	1	0	12
0	0	0	0	0	0	0	0	2	0	0	0	0	2	3	0	1	4	1
1	0	0	0	0	1	1	1	1	3	0	0	4	3	5	1	1	5	6
0	0	0	0	0	*0	0	3	1	2	0	1	2	1	1	0	1	1	0
1	0	0	0	0	1	0	2	2	1	0	0	4	2	4	1	1	4	6
0	0	0	0	0	0	0	1	0	2	0	0	3	0	3	1	0	3	6
6	0	0	0	0	0	1	3	0	1	0	2	0	0	3	0	1	3	0
0	0	0	0	0	0	0	2	1	2	0	1	0	1	3	1	0	0	1
0	0	0	0	0	0	0	4	1	1	0	1	0	0	1	0	0	3	0
0	0	0	0	0	1	1	1	0	4	0	6	0	2	3	0	4	2	3
0	0	0	0	0	0	2	1	1	2	0	8	0	5	5	2	2	2	1
0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
2	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0	1	0
1	0	0	0	0	0	0	9	3	8	0	3	3	5	5	2	0	3	1
2	0	0	0	0	0	1	0	2	2	0	3	1	6	1	1	0	0	2
0	0	0	0	0	1	0	2	1	1	0	1	0	1	2	2	2	2	2
1	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	1	0	0	4
0	0	0	0	0	0	1	0	0	0	0	2	0	2	0	1	0	1	4
0	0	0	0	0	0	1	2	0	0	1	0	1	0	0	1	0	1	3
4	0	1	0	0	1	3	12	15	33	1	20	10	16	26	7	9	14	19
8	....	4	....	3	10	11	89	63	98	6	71	44	75	116	15	38	50	74
0	0	3	0	1	0	7	19	12	25	0	7	10	11	20	2	5	5	10
0	0	0	0	0	2	1	3	2	2	0	1	1	2	1	0	0	0	3
1	0	0	0	0	3	3	13	15	11	0	7	2	17	17	2	1	6	10
0	0	0	0	0	0	0	2	0	5	0	2	1	0	3	1	0	1	1
0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	1	0	1
0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
0	0	0	0	0	1	0	1	0	2	0	1	0	0	3	0	4	0	0
0	0	0	0	0	0	2	2	1	7	0	3	2	3	3	0	1	2	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	3
0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	0	1
0	0	0	0	0	0	0	4	1	0	0	1	1	0	3	0	0	0	0
0	0	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0
1	0	0	0	0	0	0	2	3	4	0	12	1	5	3	1	1	2	9
0	0	0	0	0	1	0	0	2	3	0	0	2	0	3	0	1	0	4
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
0	0	1	0	1	0	0	1	2	4	1	1	1	3	1	0	0	2	2
0	0	0	0	0	0	0	0	4	4	1	1	1	0	1	0	0	1	0
1	0	0	0	0	0	0	0	1	1	0	1	2	0	2	0	3	0	6
0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0
1	0	0	0	0	0	1	2	1	1	0	1	0	1	0	0	0	2	2

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Ramapo	*1,000	6	14.40	2	33.3	333.33	0	0
Rest of district	.....	279	.....	54	20.0	196.46	2	4
ADIRONDACK & NORTH'N DIST.:								
Totals	.....	323	.....	102	31.3	260.06	2	7
WATERTOWN	*11,000	25	22.62	14	56.0	454.78	0	0
Ellisburgh	4,317	9	19.86	1	25.0	.....	0	0
Cape Vincent	3,143	4	15.26	.....	.....	.....	0	0
Clayton	4,214	4	11.15	2	50.0	200.00	0	0
Oxpenbridge	*22,000	23	21.00	11	32.4	323.32	0	1
Potsdam	*4,000	9	27.00	5	55.5	444.40	0	1
Malone	*7,000	9	12.90	6	55.5	333.33	0	0
Plattsburgh	*7,000	3	.....	1	33.3	333.33	1	0
Glens Falls	*10,000	11	11.00	1	9.1	31.90	0	0
Whitehall	*4,000	4	12.00	2	50.0	250.00	0	0
Fort Edward	*5,000	2	.....	.....	.....	.....	0	0
Fort Ann	4,267	7	19.32	2	28.7	.....	0	0
Argyle	3,700	1	.....	1	100.0	.....	0	0
Salem	3,500	2	.....	.....	.....	.....	0	0
Greenwich	*4,000	6	18.00	3	50.0	500.00	0	1
Rest of district	.....	201	.....	63	20.5	255.60	1	5
MOHAWK VALLEY DISTRICT:								
Totals	.....	379	.....	99	26.1	230.50	1	28
SCHENECTADY	*20,000	39	23.40	10	25.6	435.90	0	10
Schoharie	3,350	3	10.75	.....	.....	.....	0	0
Cobleskill	3,371	3	10.68	.....	.....	.....	0	0
AMSTERDAM	*20,000	13	.....	7	.....	.....	1	1
Port Plain	3,500	3	10.30	.....	.....	333.33	0	1
Johnstown	*5,000	9	18.00	3	33.3	111.11	0	0
Gloversville	*13,845	17	14.73	6	35.3	411.76	0	1
Little Falls	*8,530	14	19.76	3	21.4	142.85	0	1
Herkimer	*3,000	5	20.00	.....	.....	400.00	0	1
Ilion	*4,200	2	.....	1	50.0	500.00	0	1
UTICA	*44,000	69	18.82	19	27.2	172.10	0	3
Whitestown	*3,500	3	7.20	1	33.3	333.33	0	0
ROME	12,045	25	24.90	11	44.0	320.00	0	1
Boonville	*4,000	3	9.00	1	30.0	.....	0	0
Camden	3,400	3	10.60	.....	.....	.....	0	0
Waterford	*5,400	5	11.11	1	20.0	.....	0	1
Ballston Spa	3,200	4	15.00	1	25.0	250.00	0	1
Saratoga Springs	*10,000	20	24.00	3	15.0	150.00	0	1
Rest of district	.....	139	.....	32	21.8	193.00	6	6
SOUTHERN TIER DISTRICT:								
Totals	.....	326	.....	85	26.0	230.00	0	11
BINGHAMTON	*20,000	37	14.80	10	27.0	189.20	0	3
Otsego	*5,000	2	.....	.....	.....	.....	0	0
Candor	4,323	4	11.16	2	50.0	250.00	0	0
Waverly	*5,000	7	16.80	5	71.4	285.71	0	0
ELMIRA	*25,000	43	20.64	16	37.2	209.30	0	1
HORNELLSVILLE	*10,000	16	19.20	6	37.5	437.50	0	3
Bath	3,500	13	.....	1	7.7	.....	0	0
Corning	*8,000	10	15.00	1	10.0	500.00	0	1
Olean	*8,000	15	22.75	4	26.7	200.00	0	1
Salamanca	*6,000	6	12.00	2	33.3	500.00	0	2
JAMESTOWN	*15,838	18	15.43	3	16.7	333.33	0	4
Fredonia	*2,000	5	20.00	2	60.0	100.00	0	0
Rest of district	.....	151	.....	32	20.7	206.08	0	7

FOR SEPTEMBER — (*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	2	0	1	1	0	0	1	1	0	0	0	0
4	0	0	0	1	3	2	30	14	24	2	29	16	26	46	7	20	28	19
2	0	4	0	1	1	6	55	10	33	3	33	13	21	29	9	11	25	50
0	0	0	0	0	0	0	10	0	1	0	5	0	0	2	0	1	1	3
0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	0	1	1	2	0	1	1	0	0	0	0	0	0
0	0	1	0	0	0	0	5	1	2	0	1	0	2	3	0	0	0	5
0	0	0	0	1	0	0	2	0	1	0	1	0	1	1	0	0	0	1
0	0	0	0	0	0	0	3	1	0	0	1	0	0	0	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	1	0	3	0	1	0	0	3	1	0	0	1
0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	2	1	0	0	1	0	1	0	0	0	0	0
2	0	2	0	0	1	6	51	5	24	2	19	11	14	17	7	8	17	31
6	0	2	0	0	3	18	37	23	38	2	43	12	34	42	11	18	35	26
3	0	0	0	0	0	0	4	6	0	0	3	1	2	5	0	1	1	3
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
0	0	0	0	0	0	1	3	0	0	0	2	0	1	3	0	0	0	1
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	1	0	0	1	0	3	1	1	1	0	0	1	0
0	0	2	0	0	1	1	2	1	1	0	1	0	3	2	0	0	1	1
0	0	0	0	0	0	0	1	0	3	0	0	0	4	3	0	0	1	1
0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	3	5	6	16	0	8	1	4	9	2	4	2	5
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
0	0	0	0	0	0	0	3	1	2	0	4	0	0	1	0	0	4	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0
1	0	0	0	0	1	0	0	1	1	0	3	2	2	1	1	0	0	6
1	0	0	0	0	1	1	18	7	13	2	16	4	12	13	5	11	22	7
2	0	1	1	0	2	7	41	14	30	0	22	14	22	44	9	19	43	34
0	0	0	1	0	0	2	1	2	6	0	4	0	2	7	0	0	5	4
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	1	0
0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	1	7	1	4	0	3	1	4	6	1	4	1	2
0	0	0	0	0	0	0	4	0	1	0	0	1	0	1	2	1	2	1
0	0	1	0	0	0	0	0	0	1	0	1	0	2	3	1	1	0	3
0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	1	0	1	0
0	0	0	0	0	0	0	2	1	2	0	1	0	0	1	0	3	1	3
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
0	0	0	0	0	0	0	2	0	3	0	0	1	0	3	2	0	2	1
0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	1
1	0	0	0	0	1	2	20	10	12	0	10	9	12	20	2	8	28	9

	Population.	Total number of deaths.	Representing annual death rate per 1,000.	Deaths under 5 years.	Percentage of deaths under 5 years.	Zymotic deaths (see table).	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT: Totals	.....	412	.....	99	24.0	*224.10	1	20
Syracuse	*97,000	229	17.80	59	25.8	217.75	0	8
Baldwinsville	3,000	2	8.00	1	50.0	.....	0	0
Skaneateles	4,800	4	19.00	1	25.0	233.32	0	0
Cortland	*7,000	10	17.27	4	40.0	739.90	0	0
Homer	*3,000	3	12.00	0	.....	.....	0	0
Onondaga	*3,000	3	.....	1	33.3	.....	0	0
Hamilton	*1,000	0	12.00	0	.....	250.00	0	0
Canastota	4,300	3	16.00	1	33.3	233.33	0	0
Brookfield	2,000	5	10.00	0	.....	500.00	0	1
Norwich	6,500	9	19.02	3	33.3	333.33	0	0
Onondaga	*7,000	10	17.14	2	20.0	700.00	0	1
Worcester	*2,000	2	8.00	0	.....	.....	0	0
Cooperstown	*3,000	1	4.00	0	.....	.....	0	0
Walton	3,540	6	20.33	3	50.0	333.33	0	0
Delhi	2,000	2	20.00	0	.....	.....	0	0
Rest of district	.....	215	.....	62	28.8	710.00	1	10
WEST CENTRAL DISTRICT: Totals	.....	385	.....	95	24.6	236.36	2	9
Auburn	*26,000	23	13.40	4	18.4	217.39	0	1
Ithaca	*10,000	12	14.40	2	16.7	83.33	0	0
Waterloo	*3,500	3	9.00	1	33.3	.....	0	0
Seneca Falls	*6,000	17	34.00	6	35.3	117.68	0	0
Geneva	*6,000	17	34.00	3	17.7	117.68	0	2
Canandaigua	*3,200	4	7.82	0	.....	250.00	0	0
Manchester	*1,000	10	37.00	4	44.4	333.33	0	1
Phelps	*7,000	10	17.14	7	70.0	200.00	0	0
Penn Yan	*3,500	6	16.00	2	50.0	285.00	0	0
Batavia	*7,000	8	13.71	3	37.5	340.00	0	0
Dansville	3,700	6	19.45	2	33.3	333.33	0	0
Le Roy	*3,000	6	18.40	2	33.3	166.67	0	1
Rest of district	.....	267	.....	50	18.8	150.56	2	6
LAKE ONTARIO & WEST. DIST.: Totals	.....	928	.....	207	42.9	202.58	8	29
Buffalo	*257,000	†419	21.24	213	50.8	203.33	8	8
Tonawanda	*3,000	13	31.20	4	30.7	384.50	0	2
Amherst	4,578	6	15.70	1	16.7	833.32	0	0
Lockport	*15,000	11	.....	3	27.3	90.91	0	0
Niagara	*7,000	6	10.30	2	33.3	166.67	0	0
Medina	4,000	3	9.00	1	33.3	333.33	0	0
Albion	*5,000	8	19.20	4	50.0	125.00	0	0
Brockport	4,500	5	13.33	2	40.0	200.00	0	0
Rochester	*130,000	201	18.56	74	37.8	176.00	0	6
Palmyra	*4,800	5	12.50	5	100.0	200.00	0	0
Newark	4,000	3	9.00	1	33.3	1000.00	0	2
Lyons	*6,000	11	22.00	7	63.6	363.63	0	0
Clyde	*3,000	8	32.00	1	12.5	125.00	0	0
Owasco	*14,000	25	12.50	9	36.0	180.00	0	1
Richland	4,000	3	9.00	2	66.6	666.66	0	0
Rest of district	.....	101	.....	58	32.8	301.16	0	9
Totals for the State	.....	8,611	.....	3,356	39.0	274.45	30	229
Average for Sept. for past five y'rs.	.....	7,601	.....	3,138	40.9	278.47	33	219

† For four weeks

REMARKS.—During September 8,611 deaths have been reported, or 287 per day, which is thirty-six less months of the year. It is about the same as that of the entire year in 1889, but is higher than in September much less than that of August and July, when nearly half the deaths occurred under the age of five years. age for September. More than sixty per cent of the zymotic mortality was from diarrhœal diseases, which, is September. Diphtheria shows no material change from the death rate of recent months. Limited increase in the death rate from typhoid fever, which always occurs at this season, there is no other material Grippe; in a few old persons this disease, had last winter, is given as a contributory cause. Lightning makes the death rate per 1,000 annually for the State during the month 19.22. In 138 health districts was 20.20 per 1,000 annually; in the remaining 1,200,000 population, representing only sparsely-settled rural be Bulletin, mainly those sparsely inhabited, is about 550,000; probably no deaths occurred in part of them.

FOR SEPTEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	0	3	1	0	5	4	61	22	35	0	32	19	34	31	18	17	58	48
1	0	2	1	0	3	1	25	12	14	1	2	3	7	6	2	5	7	29
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	1	0	0	0	2	1	2	1	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0
0	0	0	0	0	0	0	1	1	0	0	2	0	0	2	1	0	1	1
0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	2	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	1	1
0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	0	1	0
1	0	0	0	0	2	3	30	9	16	1	21	11	22	19	10	11	38	16
2	0	0	0	1	0	3	59	19	21	1	35	21	28	35	13	17	52	17
1	0	0	0	0	0	2	0	3	6	1	4	0	2	2	0	0	5	3
0	0	0	0	0	0	0	1	0	0	0	1	3	1	0	1	0	4	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0
0	0	0	0	0	0	0	2	0	1	0	3	3	3	2	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	4	0	3	2	0	1	4	1
0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
0	0	0	0	0	0	0	2	0	1	0	2	1	0	1	0	1	1	0
0	0	0	0	0	0	0	2	2	0	0	3	0	0	2	0	1	0	0
0	0	0	0	0	0	0	1	1	0	0	0	1	0	2	1	0	0	0
0	0	0	0	0	0	1	3	0	1	0	1	1	0	0	0	1	1	1
0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1
1	0	0	0	0	0	0	46	12	12	0	14	11	18	23	11	11	35	7
5	0	2	1	1	2	26	164	55	78	11	80	20	56	106	29	37	57	161
3	0	1	1	0	0	15	83	30	39	4	34	8	29	47	10	18	6	75
1	0	0	0	0	0	1	0	1	1	0	0	0	1	2	1	0	0	2
0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	1	2	1	0	0	0	2	0	0	2	0	3
0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	2
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	2	1	0	0	1	1	1	0	0	1	0
0	0	0	0	0	0	0	1	0	2	1	1	0	0	0	0	0	0	0
0	0	0	0	1	1	3	23	9	20	3	20	5	13	32	14	9	9	33
0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	4	0	2	0	0	0	0	1	0	0	1	3
0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	1	3	0
0	0	0	0	0	0	1	2	1	1	0	4	1	3	6	0	1	2	2
0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0
1	0	1	0	0	1	1	40	9	10	3	17	4	7	16	4	6	32	40
84	....	40	29	15	102	237	1,166	710	1,005	47	768	418	526	871	236	375	450	1,279
105	6	65	21	13	95	369	1,114	593	926	60	552	431	445	762	188	306	519	870

ending September 27.

than in August, seventy less than in July, and thirty-two less than the daily death rate for the preceding of that year. The proportion of infant mortality is a little below the average for this month, and very In each 1,000 deaths, 225 were from zymotic diseases. This is fifty-three less deaths per 1,000 than the averthough less by nearly one-half than in the two months preceding, uniformly continues to show a high rate outbreaks from it have been reported by towns in the Mohawk Valley district. Aside from the usual variation in the zymotic mortality from that of August. Some deaths have been certified to as due to stroke caused five deaths. The 8,611 deaths for the month are reported from 5,439,000 population, which including all the cities and larger villages, the aggregate population of which is 4,228,000, the death rate towns, the death rate for the month is 16.00 per 1,000. The population of towns not reporting in time for

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

[Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT:								
Totals	.....	4,843	.....	1,984	41 0	280.50	13	93
NEW YORK CITY	*1,631,205	2,728	19.68	1,053	38.6	151.75	10	49
BROOKLYN	*852,467	1,611	20.85	694	45.2	327.00	0	24
Gravesend	*6,912	6	10.49	2	33.3	166.67	0	0
New Utrecht	*5,000	7	16.80	4	57.1	.....	0	0
Flatbush	8,000	13	19.50	3	23.1	.....	0	0
LONG ISLAND CITY	*40,000	51	15.22	14	23.8	140.00	1	1
Newtown	*10,000	32	38 40	10	31.2	156.00	0	1
Oyster Bay	*12,000	17	17.00	3	17.7	.....	0	0
Hempstead	18,160	10	.....	2	20 0	200.00	0	2
North Hempstead	8,000	12	18.00	5	41.7	84.33	0	0
Jamaica	10,089	38	.....	13	33.0	105.20	1	0
Flushing	16,000	16	12.00	1	6.2	125.00	0	2
Southold	7,500	13	20.80	3	23.1	307.70	0	0
Sag Harbor	*3,000	4	16.00	2	50.0	500.00	0	1
Huntington	8,100	8	12.00	3	37.5	250 00	0	0
New Brighton	*15,000	27	21.60	1	3 7	74.00	0	0
Edgewater	12,000	30	30.00	8	26.6	166.67	0	0
Port Richmond	*3,600	3	10.00	0		.....	0	0
Westfield	7,000	6	10.30	1	16.6	166.66	0	0
YONKERS	*31,919	45	16.75	18	40.0	200.00	0	1
Westchester	*7,000	13	22.28	5	38.4	77.00	0	0
Mount Vernon	*14,000	13	14.18	4	30.7	231.25	0	0
Portchester	*5,583	6	12.90	0	....		0	0
Sing Sing	*6,500	12	22.15	2	16 7	166.67	0	1
New Rochelle	*6,000	10	20.00	1	10.0	.....	0	0
Peekskill	*7,000	13	22.28	4	30.7	153.50	0	0
Rest of district	.....	199	.....	28	14.7	147.20	1	11
HUDSON VALLEY DISTRICT:								
Totals	.....	779	.....	167	21.4	142.30	3	24
ALBANY	*103,000	133	15.50	32	24.0	142.85	1	3
COHOES	*22,432	41	21.95	13	32.0	149.10	0	3
TROY	*65,000	92	17.00	19	20.6	130.43	0	1
West Troy	*13,000	19	17.52	8	42.1	.....	0	0
Green Island	*6,000	5	10.00	0	....	.....	0	0
Lansingburgh	*10,000	15	18.00	3	20.0	200 00	0	2
Hoosick Falls	*6,000	4	8.00	1	25.0	250.00	0	0
Greenbush	*8,000	12	18.00	3	25.0	166.67	0	1
Coxsackie	4,000	9	27.00	1	11.0	111.11	0	0
Catskill	*4,930	8	19.47	3	37.5	375.00	0	0
HUDSON	*10,027	12	14.40	3	25.0	83.33	0	0
KINGSTON	*21,000	24	13.71	5	10.8	333.33	0	0
Ellenville	3,000	1	4.00	0	....	.....	0	0
Marbletown	4,000	6	18.00	1	16.7		0	0
Esopus	4,736	5	12.66	1	20.0	200.00	0	0
Saugerties	*4,000	2	6.00	0			0	0
POUGHKEEPSIE	*22,836	35	18.42	9	25.7	142.85	0	2
Fishkill	10,732	14	15.20	2	14.3	.....	0	0
Wappinger Falls	*5,000	4	9.60	2	50.0	.....	0	0
NEWBURGH	*23,263	22	13.20	3	13 7	136.37	0	0
Port Jervis	*9,500	17	21.47	4	23.5	58.75	0	1
Middletown	*11,918	19	19.18	4	21.0	105.20	0	0
Goshen	*4,500	10	26.66	1	10.0	100.00	0	1
Haverstraw	*7,000	9	15.43	4	44 4	333.33	0	1
Nyack	*5,000	9	21.60	3	33.3	111.11	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during October, 1890.

population preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
44	0	46	36	5	69	226	223	699	663	51	354	346	300	479	109	188	104	795
15	0	12	28	3	27	112	148	406	400	27	198	205	163	246	65	108	37	459
20	0	29	6	2	28	91	58	233	190	19	111	90	87	157	28	49	25	264
0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	2	0	0	1
0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	1	0	2
0	0	0	0	0	0	0	0	4	2	0	3	1	0	1	0	2	0	0
1	0	1	0	0	0	1	2	8	5	0	7	5	4	2	0	3	1	2
3	0	0	0	0	0	0	1	5	3	0	2	1	0	7	0	0	0	2
0	0	0	0	0	0	0	0	1	4	0	1	1	4	0	0	2	1	3
0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	1	0	2	1
0	0	0	0	0	1	0	0	1	3	0	0	1	1	4	0	0	0	1
0	0	1	1	0	1	0	0	4	7	0	3	2	2	4	1	1	3	7
0	0	0	0	0	0	0	0	1	2	0	0	2	3	2	1	1	1	1
2	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	0	4	2
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	2	0	2	0	0	1	0	0	1	0	0	2	0
0	0	1	0	0	0	1	0	2	4	0	0	2	2	4	2	3	5	1
1	0	0	0	0	0	3	1	3	0	1	0	0	4	7	0	4	2	4
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0
0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	2	1	0
0	0	0	0	0	0	2	6	6	8	0	1	5	3	7	1	0	1	4
0	0	0	0	0	0	1	0	4	1	0	2	1	0	0	0	0	2	2
0	0	0	0	0	0	1	2	2	2	0	2	2	0	0	1	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	1	3	1	0	0	0	0
1	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2	1	1	2
0	0	0	0	0	0	0	0	2	2	1	0	1	0	2	0	2	0	0
1	0	0	0	0	0	1	0	1	1	1	1	0	1	3	0	0	1	2
0	0	1	0	0	1	9	5	10	27	2	18	23	18	27	5	9	14	18
13	0	3	0	0	7	39	22	79	101	2	72	36	65	108	23	32	83	67
1	0	2	0	0	0	12	0	19	20	0	15	9	7	18	5	2	4	15
0	0	0	0	0	0	1	2	9	4	0	2	1	0	7	0	3	0	9
2	0	0	0	0	2	3	4	25	12	0	7	2	11	6	2	3	9	3
0	0	0	0	0	0	0	0	2	4	0	0	1	3	2	0	0	0	7
0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	1	0	0	0
0	0	0	0	0	0	0	1	1	2	0	1	1	2	2	0	1	1	1
0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	1	0	0
0	0	0	0	0	0	1	0	1	1	0	2	0	2	1	0	1	0	2
0	0	0	0	0	0	0	1	0	0	0	1	0	1	3	0	0	2	1
0	0	0	0	0	0	2	1	0	1	0	0	0	4	0	0	0	0	0
0	0	0	0	0	1	0	0	1	2	0	3	0	3	0	1	1	0	0
4	0	0	0	0	0	3	1	3	3	0	2	0	4	2	0	0	2	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	0	0	1	0
0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
2	0	0	0	0	0	1	0	1	5	1	2	2	2	6	1	0	4	6
0	0	0	0	0	0	0	0	0	0	0	3	4	2	2	1	2	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	1
0	0	0	0	0	1	1	1	3	3	0	1	1	2	2	0	0	4	1
0	0	0	0	0	0	0	0	0	3	0	2	1	1	3	0	4	0	2
1	0	1	0	0	0	0	0	2	3	0	5	0	1	3	0	1	1	2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	1	0	3	0
0	0	0	0	0	0	0	2	0	0	0	2	1	0	3	0	0	0	1
0	0	0	0	0	0	0	1	0	3	0	1	0	0	1	0	1	1	1

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of —	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Ramapo	*5,000	5	12.00	0	....	200.00	0	1
Rest of district	.....	247	.....	42	16.8	144.15	2	8
ADIROND'CK & NORTH'N DIST.:								
Totals	.....	256	.....	52	20.7	134.60	0	8
WATERTOWN	*14,733	22	18.00	5	22.7	227.27	0	2
Ellisburgh	4,811	2	6.00	0	....	500 00	0	1
Cape Vincent	3,143	1	.....	0	....	.....	0	0
Clayton	4,314	4	11.17	0	....	.....	0	0
OGDENSBURG	*12,000	19	19.00	11	57 8	105.25	0	0
Potsdam	*4,000	5	15.00	3	60.0	.....	0	0
Malone	*9,000	9	12.00	4	44.4	333.33	0	0
Plattsburgh	*7,000	9	15.43	0	....	.....	0	0
Glens Falls	*10,000	1	...	0	....	.....	0	0
Whitehall	*4,000	2	6.00	0	....	.....	0	0
Fort Edward	*5,000	3	7.20	0	....	.....	0	0
Fort Ann	4,267	1	.....	0	....	.....	0	0
Argyle	3,700	1	.....	0	....	.....	0	0
Salem	3,500	2	.....	0	....	....	0	0
Greenwich	*4,000	6	18.00	1	16 7	166.67	0	0
Rest of district	.....	169	.....	28	16.5	124.70	0	5
MOHAWK VALLEY DISTRICT:								
Totals	.....	402	.....	83	20.6	142.00	1	23
SCHENECTADY	*20,000	34	20.40	5	14.7	352.85	0	8
Schoharie	3,350	4	14.33	1	25.0	250.00	0	0
Cobleskill	3,371	5	17.80	1	20.0	200.00	0	0
AMSTERDAM	*17,264	28	19.45	5	17,8	142.85	0	3
Fort Plain	3,500	1	.....	1	....		0	0
Johnstown	*6,000	9	18.00	2	22.2	222.22	0	0
GLOVERSVILLE	*13,845	11	9.53	2	18.2	272.73	0	1
Little Falls	*8,500	11	15.53	1	90.9	181.82	0	1
Herkimer	*3,000	3	12.00	0	....	333.33	0	1
Ilion	*4,200	3	8.57	1	33.3	333.33	0	0
UTICA	*44,000	71	19.36	20	28.1	98.45	0	3
Whitestown	*5,000	4	9.60	0	...	500.00	0	0
ROME	15,000	17	13.60	3	17.7	470.64	0	1
Boonville	*4,000	2	6.00	0	....	.....	0	0
Camden	3,400	3	10.60	2	66.6	333.33	0	0
Waterford	*5,400	10	22.22	2	20.0	100.00	0	0
Ballston Spa	3,200	8	30.00	5	72.5	.....	0	0
Saratoga Springs	*10,000	13	14.40	2	16.7	83.33	0	1
Rest of district	.....	165	.....	30	18.2	61.60	1	4
SOUTHERN TIER DISTRICT:								
Totals	.....	286	.....	50	17.4	173.85	0	9
BINGHAMTON	*35,000	49	16.80	7	14.0	230.00	0	2
Owego	*6,000	7	14.00	2	28.5	....	0	0
Candor	4,323	5	13.90	2	40.0	200.00	0	0
Waverly	*5,000	4	9.60	1	25.0	.....	0	0
ELMIRA	*28,000	39	16.72	8	21.0	263.15	0	2
HORNELLSVILLE	*10,000	11	13.20	2	18.2	181.81	0	1
Bath	3,500	4	13.71	0	...	.....	0	0
CORNING	*8,553	11	15.44	3	27.3	272.73	0	2
Olean	*8,000	7	10.50	2	28.5	142.85	0	0
Salamanca	*6,000	4	8.00	2	50.0	.....	0	0
JAMESTOWN	*15,838	15	11.37	5	33.3	400.00	0	1
Fredonia	*3,000	4	16.00	1	25.0	.....	0	0
Rest of district	.....	126	.....	15	11.8	119.10	0	1

FOR OCTOBER—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal.)	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0
3	0	0	0	0	1	13	7	10	31	1	20	12	17	40	9	10	47	14
0		1	0	0	0	17	9	20	25	2	33	13	24	20	9	13	41	21
0	0	0	0	0	0	0	3	0	2	1	2	1	1	3	0	3	3	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0
0	0	0	0	0	0	1	1	2	2	0	2	2	1	2	1	0	0	5
0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	1
0	0	0	0	0	0	2	1	3	1	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	1	0	2	0	1	0	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	0	0	1	1
0	0	0	0	0	0	12	4	14	17	0	24	7	18	10	7	8	31	12
1	0	3	1	0	1	18	9	30	47	5	35	20	36	54	16	20	47	35
1	0	0	0	0	0	1	2	2	4	0	5	1	3	2	1	2	0	2
0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0
0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	1	0
0	0	0	0	0	0	0	1	3	5	1	0	1	0	5	2	2	3	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1
0	0	2	0	0	0	0	0	0	1	1	2	0	1	0	0	0	1	1
0	0	1	0	0	0	1	0	1	0	0	0	1	2	0	0	2	1	1
0	0	0	0	0	0	1	0	0	1	0	1	0	1	3	0	2	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	3	1	5	14	0	2	6	7	18	1	1	2	8
0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0
0	0	0	0	0	1	6	0	1	1	0	0	0	2	0	1	0	3	1
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1
0	0	0	0	0	0	0	1	1	1	0	1	1	0	2	1	1	1	0
0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	0	0	1	2
0	0	0	0	0	0	0	0	0	3	0	1	0	1	3	0	0	3	1
0	0	0	1	0	0	2	2	13	16	3	21	8	16	17	9	8	30	14
4	0	2	6	0	2	19	7	22	22	4	25	13	25	32	14	15	37	28
1	0	0	0	0	0	7	1	7	6	3	4	2	1	2	3	1	6	3
0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0	1	1	0
0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1
0	0	1	0	0	1	6	0	2	3	0	3	4	4	3	3	2	0	5
0	0	0	0	0	0	1	0	1	0	0	0	0	2	4	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1
0	0	0	0	0	0	0	1	2	2	0	1	0	0	0	0	1	1	1
0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1
1	0	0	4	0	0	0	0	2	3	0	3	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1
2	0	1	2	0	0	5	4	7	4	1	11	6	15	18	7	7	24	11

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	380	.....	52	14.0	160.52	1	23
SYRACUSE	*87,000	123	16.93	29	23.5	178.75	0	6
Skaneateles	4,866	4	10.00	0	....	.....	0	0
Cortland	*9,000	12	16.00	1	8.3	166.67	0	1
Homer	*3,000	4	16.00	1	25.0	.....	0	0
Oneida	*6,018	8	16.00	0	....	.....	0	0
Hamilton	*4,000	7	21.00	0	....	.....	0	0
Cazenovia	4,363	3	8.25	0	....	.....	0	0
Brookfield	3,685	7	22.70	0	....	.....	0	0
Norwich	5,500	8	17.45	3	37.5	125.00	0	0
Oneonta	*7,000	4	6.85	1	25.0	.....	0	0
Worcester	*3,000	4	16.00	0	....	250.00	0	1
Cooperstown	*3,000	2	8.00	0	....	.....	0	0
Walton	3,540	3	10.12	1	33.3	.....	0	0
Delhi	3,000	3	12.00	0	....	333.33	0	1
Rest of district	.....	188	.....	16	13.6	178.85	1	14
WEST CENTRAL DISTRICT:								
Totals	.....	311	.....	43	13.8	125.40	2	5
AUBURN	*26,000	49	22.61	7	14.3	163.33	1	3
ITHACA	*10,000	12	14.40	3	25.0	83.33	0	0
Waterloo	*4,500	9	24.00	3	33 3	222.22	0	0
Seneca Falls	*6,000	9	18.00	6	55.5	333.33	0	0
Geneva	*6,000	12	24.00	4	33.3	250.00	0	0
Manchester	*4,000	3	9.00	0	....	.....	0	0
Phelps	*7,000	6	10.28	2	33.3	.....	0	0
Penn Yan	*4,500	11	29.33	2	18.2	.....	0	0
Batavia	*7,000	3	.....	0	....	333.33	0	1
Dansville	3,700	3	10.00	0	....	.....	0	0
Le Roy	*5,000	6	14.40	0	....	.....	0	0
Rest of district	.....	188	.....	16	8.4	110.50	1	5
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	883	.....	234	26.5	173.27	4	43
BUFFALO	*255,000	†354	18.05	145	41.0	186.40	2	17
Tonawanda	*5,000	19	.....	6	31.6	369.00	1	3
Amherst	4,578	5	13.10	1	20.0	.....	0	0
LOCKPORT	*15,000	11	8.80	1	9.0	181.81	0	1
Niagara	*7,000	13	22.28	3	23.0	153.75	0	1
Medina	4,000	5	15.00	2	40.0	200.00	0	0
Albion	*5,000	7	16.80	1	14.3	.....	0	0
Brockport	4,500	5	13.33	2	40.0	.....	0	0
ROCHESTER	*138,327	170	14.75	44	25.9	.....	0	7
Palmyra	*4,800	4	10.00	0	....	.....	0	0
Newark	4,000	2	6.00	0	....	500.00	0	1
Lyons	*6,000	7	14.00	1	14.3	285.71	0	1
Clyde	*3,000	9	.....	0	....	111.11	0	1
OSWEGO	*24,000	27	.....	6	....	.....	0	2
Richland	4,000	2	6.00	0	....	.....	0	0
Rest of district	.....	243	.....	21	8.6	144.05	1	9
Totals for the State	.....	8,140	.....	2,665	32.7	185.00	24	232
Average for Oct. for past five years	.....	7,271	.....	2,342	32.2	201.08	30	215

†For four weeks

REMARKS.—There were 262 deaths per day during October, which is a little more than the daily rate occurred under the age of 5 years, which is lower than in September, but higher, by five per cent, than in mortality to 224 per 1,000, or about seven per cent less. This difference is largely in diarrhœal diseases, in scarlet fever and measles. Typhoid fever has caused slightly fewer deaths and whooping cough has been from all zymotic diseases is materially lessened, excepting that from measles. Diphtheria shows a marked that month than in September; the increase this year is but little less than that of the average. Of the makes their annual death rate per 1,000 population 19.03, that of the preceding month being 20.20. The population. About five per cent of the deaths occurring in the cities and large villages were from

FOR OCTOBER—(*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
5	0	1	0	1	3	7	20	36	31	5	29	16	42	43	18	27	41	31
1	0	0	0	1	0	5	9	9	12	0	7	4	14	15	2	13	5	20
0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0
0	0	0	0	0	1	0	0	2	0	0	2	1	0	0	1	0	4	0
0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	1	0	1	1	0	2	0	1	1	0
0	0	0	0	0	0	0	0	2	0	0	0	1	0	2	0	1	1	0
0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	2	0
1	0	0	0	0	0	0	0	1	0	0	0	2	0	1	1	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
3	0	1	0	0	2	2	11	15	15	5	16	3	26	20	11	10	25	8
3	0	0	0	0	0	5	20	31	33	0	19	12	39	39	14	13	48	24
2	0	0	0	0	0	1	1	3	8	0	7	0	7	6	1	2	3	4
0	0	0	0	0	0	1	0	1	1	0	1	0	1	1	0	2	3	1
0	0	0	0	0	0	0	2	0	0	0	1	0	3	0	0	0	2	1
0	0	0	0	0	0	0	3	1	0	0	1	0	0	3	1	0	0	0
1	0	0	0	0	0	0	2	3	1	0	1	0	0	1	0	1	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	2
0	0	0	0	0	0	0	0	2	2	0	0	0	0	1	0	1	3	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	1	1	0
0	0	0	0	0	0	3	12	21	19	0	6	12	25	24	11	6	32	11
13	0	4	4	0	2	39	44	84	104	2	68	29	66	109	35	58	69	106
4	0	2	1	0	0	26	14	32	39	1	39	5	16	44	15	26	0	71
1	0	0	0	0	0	0	2	1	3	0	2	0	0	2	0	2	1	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	0	0	0	0	0	4	0	0	1	1	3
0	0	0	0	0	0	0	1	0	3	0	1	0	1	0	0	2	1	3
0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	1	0	0
0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	1	1	1
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	2
2	0	0	0	0	1	8	10	16	18	0	5	6	17	28	8	12	18	14
0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	3	1	0	0	1	0	1	0	2	0	0
1	0	0	0	0	0	1	4	0	4	0	1	1	0	4	1	4	2	2
0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
5	0	2	3	0	0	4	11	26	32	0	17	15	26	25	11	7	41	8
83	0	60	47	6	84	370	354	1,001	1,026	71	635	485	597	884	238	366	470	1,107
101	5	80	25	15	87	551	368	843	981	59	474	374	467	749	206	292	522	847

ending October 25.

reported during September and about the same as that of October, 1889. Nearly one-third of the deaths October, 1890. The mortality from zymotic diseases, compared with that of September, is 155 per 1,000 total deaths from which have fallen off from 1,166 to 343. There is an increase in diphtheria and a slighter one less prevalent. Compared with the average of the month of October of the past five years, the mortality rise in mortality each year in October, the average of the past five years being about one-third greater in 8,140 deaths during the month, all but 1,409 were reported from 125 of the cities and larger villages, which death rate for the entire reporting portion of the State (700 health districts) is about sixteen per 1,000 diphtheria and in the rural towns about three per cent.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	4,710	.....	1,578	33.8	149.15	14	99
NEW YORK CITY	*1,631,305	2,748	20.48	932	33.8	140.07	13	34
BROOKLYN	*352,467	1,462	21.34	521	35.6	171.10	0	44
Gravesend	*6,912	8	14.06	2	25.0	125.00	0	0
New Utrecht	*5,000	4	9.60	2	50.0	.....	0	0
Flatbush	8,000	13	19.50	6	46.1	384.60	0	2
LONG ISLAND CITY	*30,396	35	13.81	16	45.7	85.42	0	0
Newtown	*10,000	16	19.20	5	31.2	62.50	0	0
Oyster Bay	*12,000	9	.....	2	22.2	222.22	0	0
Hempstead	18,160	13	.....	6	46.1	153.85	0	1
North Hempstead	8,000	9	13.50	....	....	111.11	0	0
Jamaica	10,089	16	19.00	6	37.5	187.50	0	0
Flushing	16,000	18	13.50	4	22.2	111.11	0	0
Southold	7,500	5	8.00	....	....	.....	0	0
Sag Harbor	*3,000	6	24.00	....	....	.....	0	0
Huntington	8,100	11	16.50	1	9.1	.....	0	0
New Brighton	*15,000	25	20.00	7	28.0	120.00	0	0
Edgewater	12,000	25	25.00	7	28.0	240.00	0	2
Port Richmond	*3,600	8	26.66	1	12.5	250.00	0	0
Westfield	7,000	7	12.00	3	42.8	.....	1	0
YONKERS	*31,949	51	19.12	23	45.6	137.25	0	0
Westchester	*7,000	19	32.57	5	26.3	.....	0	0
Mount Vernon	*11,000	7	.....	3	42.8	142.85	0	1
Portchester	*5,583	8	17.20	3	37.5		0	0
Sing Sing	*6,500	8	14.77	1	12.5	125.00	0	1
New Rochelle	*6,000	6	12.00	2	33.3	.....	0	0
Peekskill	*7,000	9	15.43	1	11.1	111.11	0	0
Rest of district	.....	164	.....	19	11.6	130.00	0	5
HUDSON VALLEY DISTRICT: Totals	.....	735	.....	151	21.0	125.20	4	17
ALBANY	*103,000	161	19.20	34	21.2	100.00	1	4
COHOES	*22,432	9	.....	5	55.5	222.22	0	1
TROY	*65,000	86	17.00	22	25.5	81.40	0	0
West Troy	*13,000	27	24.91	7	25.8	185.22	0	1
Green Island	*6,000	6	12.00	3	50.0	.....	0	0
Lansingburgh	*10,000	7	....	3	42.8	285.71	0	0
Hoosick Falls	*6,000	4	8.00	3	75.0	.....	0	0
Greenbush	*8,000	8	12.00	4	50.0	750.00	1	1
Coxsackie	4,000	2	6.00	....	....	.....	0	0
Catskill	*4,930	11	26.80	5	45.5	191.90	0	0
HUDSON	*10,000	10	12.00	5	50.0	300.00	0	0
KINGSTON	*21,000	26	14.86	10	38.5	115.38	1	0
Ellenville	3,000	1	.....	....	....	.....	0	0
Marbletown	4,000	.....	.....	....	....	.....	0	0
Esopus	4,736	4	10.21	....	....	.....	0	0
Saugerties	*4,000	1	.....	....	....	.....	0	0
POUGHKEEPSIE	*22,836	35	18.40	5	14.3	57.14	0	0
Fishkill	10,732	3	.....	....	....	.....	0	0
Wappinger Falls	*5,000	4	9.60	1	25.0		0	0
NEWBURGH	*24,263	34	17.54	6	17.6	176.47	0	1
Port Jervis	*9,500	5	.....	...	...	400.00	0	2
MIDDLETOWN	*11,918	14	.....	4	28.5	71.43	0	0
Goshen	*4,500	8	21.33	...		125.00	0	1
Nyack	*5,000	9	21.60	1	11.1	.....	0	0
Ramapo	*5,000	6	14.40	...	....		0	0
Rest of district	.....	254	.....	33	13.6	116.67	1	6

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during November, 1890.

populations preceded by a star (*) are estimated to date: the remainder are from the of 1880.

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
37	....	73	57	10	47	288	85	867	632	58	295	296	312	468	117	225	99	640
12	0	40	48	7	26	160	47	498	394	43	168	193	187	204	79	131	40	424
20	0	30	6	2	17	106	25	297	164	11	94	77	91	197	28	65	28	160
0	0	0	0	0	0	1	0	0	2	0	1	0	0	2	0	1	0	1
0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1
0	0	2	0	0	0	1	0	2	1	0	0	1	2	0	0	0	0	2
1	0	0	0	0	0	0	2	10	2	0	1	1	1	4	0	4	1	8
0	0	0	0	0	0	0	1	3	1	0	3	1	0	2	0	0	1	4
1	0	0	0	1	0	0	0	1	0	0	1	1	1	2	0	0	0	1
0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	2	1	4
1	0	0	0	0	0	0	0	2	1	0	0	1	1	1	0	1	0	1
1	0	0	0	0	0	2	0	2	0	0	1	0	1	4	0	2	1	2
1	0	0	0	0	0	1	1	0	1	0	2	3	3	1	0	1	0	5
0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	1
0	0	0	0	0	0	0	0	1	2	0	2	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	2	0	2	1	1	2	0	0	1	2
0	0	0	0	0	0	1	0	3	1	0	1	2	2	4	2	1	4	2
0	0	0	0	0	0	4	0	4	5	1	1	0	2	1	1	2	0	2
0	0	0	0	0	0	2	0	3	1	0	0	0	0	1	0	0	1	0
0	0	0	0	0	0	0	1	0	4	1	0	0	0	0	0	0	0	0
0	0	0	2	0	0	1	4	16	8	1	4	2	4	3	0	2	2	2
0	0	0	0	0	0	0	0	4	4	0	0	1	1	5	1	1	2	0
0	0	0	0	0	0	0	0	1	2	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0	0	3
0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	1	1	1
0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0	1	2	0	0	0	1	2	0	0	2	0
1	0	1	0	0	3	7	4	16	27	1	11	10	13	25	4	10	14	12
7	0	2	0	1	6	42	10	78	110	3	48	38	59	98	25	39	76	72
0	0	1	0	1	0	8	1	15	37	0	11	7	11	28	5	9	8	14
0	0	0	0	0	0	1	0	2	0	0	0	1	0	2	0	0	0	2
0	0	0	0	0	0	6	1	17	11	0	7	2	6	9	4	6	9	8
0	0	0	0	0	0	3	1	4	3	0	3	3	2	3	1	1	0	2
0	0	0	0	0	0	0	0	1	1	0	2	0	1	1	0	0	0	0
0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	3	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	1	1	1	0	0	1	1	2	0	0	3	0
1	0	0	0	0	0	1	2	1	2	0	0	1	0	0	0	2	0	0
1	0	0	0	0	0	1	3	3	1	0	4	2	4	2	0	2	2	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	3	6	0	2	1	3	8	2	2	4	2
0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1
0	0	0	0	0	1	3	1	2	4	1	1	3	2	8	1	0	2	4
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
0	0	1	0	0	0	0	0	2	2	0	0	0	0	4	0	2	1	2
0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3	0
0	0	0	0	0	0	0	0	1	1	0	0	0	3	2	1	0	0	1
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	3	0
3	0	0	0	0	4	12	2	23	33	2	15	15	25	25	10	11	36	31

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	314	.....	58	17.8	92.00	0	9
SYRACUSE	*87,000	89	12.27	31	34.5	155.80	0	3
Baldwinsville	3,000	1	4.00	....	....	.....	0	0
Cortland	*9,000	14	18.67	4	28.5	72.85	0	1
Homer	*3,000	1	4.00	....	....	.....	0	0
Oneida	*6,018	1	....	....	....	.....	0	0
Hamilton	*4,000	3	9.00	1	33.3	.....	0	0
Cazenovia	4,363	5	14.00	1	20.0	.....	0	0
Brookfield	3,685	5	16.22	....	....	200.00	0	1
Oneonta	*7,000	10	17.14	1	10.0	200.00	0	0
Worcester	*3,000	2	8.00	1	50.0	500.00	0	0
Cooperstown	*3,000	1	4.00	....	....	.....	0	0
Walton	3,540	1	.....	....	....	.....	0	0
Delhi	3,000	3	12.00	....	....	.....	0	0
Rest of district	.....	178	.....	17	9.4	55.55	0	4
WEST CENTRAL DISTRICT:								
Totals	.....	241	.....	28	11.6	58.30	0	9
AUBURN	*26,000	0	13.84	7	23.3	333.33	0	0
Ithaca	*10,000	9	.....	3	33.3	333.33	0	1
Waterloo	*4,500	1	.....	....	....	.....	0	0
Seneca Falls	*6,000	8	16.00	....	....	.....	0	0
Geneva	*6,000	12	24.00	3	25.0	.....	0	0
Canandaigua	*6,300	7	.....	....	....	.....	0	0
Manchester	*4,000	9	27.00	1	111.11	111.11	0	0
Phelps	*7,000	7	12.00	1	14.3	142.85	0	1
Penn Yan	*4,500	3	.....	....	....	.....	0	0
Batavia	*7,000	5	.....	1	20.0	200.00	0	0
Dansville	3,700	5	16.22	....	....	.....	0	0
Le Roy	*5,000	7	16.80	....	....	.....	0	0
Rest of district	.....	138	.....	12	8.6	64.25	0	7
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	832	.....	231	27.7	173.00	8	46
BUFFALO	*225,000	†401	16 38	160	40.0	182.50	6	25
Tonawanda	*5,000	11	26.40	3	27.3	272.73	0	1
Amherst	4,578	3	.....	....	....	666.66	0	2
LOCKPORT	*15,000	9	.....	1	11.1	222.22	0	0
Niagara	*7,000	7	12.00	1	14.3	142.85	0	0
Medina	4,000	6	18.00	2	33.3	166.67	0	0
Albion	*5,000	6	14.40	....	....	666.67	0	4
Brockport	4,500	1	....	....	....	.....	0	0
ROCHESTER	*138,327	148	12.80	37	....	.....	2	3
Palmyra	*4,800	3	.....	2	66.6	.....	0	0
Newark	3,500	1	.....	....	....	.....	0	0
Lyons	*6,000	6	12.00	1	16.7	166.67	0	1
Clyde	*3,000	1	.....	....	....	....	0	0
OSWEGO	*24,000	27	13 50	3	11.1	111.11	0	2
Fulton	4,000	2	6.00	....	....	.....	0	0
Richland	4,000	4	12.00	1	25.0	.....	0	0
Rest of district	.....	196	.....	20	9.8	196.00	0	8
Totals for the State	.....	7,709	.....	2,199	28 5	146.00	29	206
Average for Nov. for past five years	.....	6,777	.....	2,070	30.5	181.93	27	151

† For five weeks

REMARKS.—November is uniformly the healthiest month in the year, having the lowest death rate. The forty-two less deaths daily in November than the daily rate for the year, in 1888 there were fifty-three less, deaths each day for 1890 has been 305, and during November 257, a diminution of nearly fifty per diem. from all causes in October to 146 per 1,000 in November. It is also lower than the average for November, measles. As noted in the last bulletin, diphtheria always shows a marked rise in mortality in October. *There were* seventy-two more deaths from this cause than in October. Scarlet fever caused forty-two *The increase* in measles is moderate. The death rate, according to the reported mortality of 137 cities *separately* in the bulletin about thirteen, that of the reporting portion of the State (2,4)

FOR NOVEMBER—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1	0	2	1	1	0	13	5	18	31	1	18	6	25	18	6	12	42	18
0	0	0	0	0	0	0	1	0	1	0	4	1	1	0	0	0	4	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	1	0	0	0	0	0	1	2	0	1	0	2	0	0	3	0	1
0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	1
0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	1	0	0	1	0	3	0	0	0	1	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0
0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	2	2	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0
0	0	1	1	1	0	9	1	14	21	1	12	5	15	14	6	5	31	13
4	0	3	1	1	2	35	5	34	36	2	20	23	25	46	8	14	38	26
1	0	0	0	0	0	1	1	6	5	1	3	5	3	1	2	1	2	3
0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
0	0	0	0	0	0	0	0	2	4	0	0	2	1	5	0	0	1	2
0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	1	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0
1	0	0	0	0	0	7	0	0	2	0	1	1	2	7	1	0	2	2
0	0	0	0	0	0	1	0	1	1	0	0	0	0	2	0	1	2	0
0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
1	0	2	0	0	0	6	0	8	9	0	4	5	2	6	0	1	1	6
1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	1	0	1	8	0	2	2	0	2	0	0	5	1	0	2	2
0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	2
0	0	0	0	0	0	0	1	0	1	0	1	0	1	2	0	1	1	1
0	0	1	0	1	1	7	2	12	7	0	7	6	5	10	3	7	15	3
4	0	7	6	0	5	9	4	42	31	2	20	16	29	36	8	22	32	25
1	0	1	0	0	0	8	0	12	5	0	0	4	2	8	3	2	5	3
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	2	0	0
2	0	1	0	0	0	0	1	4	4	0	2	0	3	3	2	3	2	3
0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	1	1	1
0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	2	1	0	1	1	4	0	0	0	0	1
0	0	0	0	0	1	0	0	2	0	0	1	1	3	2	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	1	1
0	0	0	3	0	0	0	0	4	2	0	2	0	1	2	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	3
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	2	0
1	0	3	3	0	2	1	3	15	15	2	10	9	13	15	1	14	18	10

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT:								
Totals	.....	314	.....	58	17.8	92.00	0	9
SYRACUSE	*87,000	89	12.27	31	34.5	155.80	0	3
Baldwinsville	3,000	1	4.00	....	....	.....	0	0
Cortland	*9,000	14	18.67	4	28.5	72.85	0	1
Homer	*3,000	1	4.00	....	....	.....	0	0
Oneida	*6,018	1	....	....	....	.....	0	0
Hamilton	*4,000	3	9.00	1	33.3	.....	0	0
Cazenovia	4,363	5	14.00	1	20.0	.....	0	0
Brookfield	3,685	5	16.22	....	....	200.00	0	1
Oneonta	*7,000	10	17.14	1	10.0	200.00	0	0
Worcester	*3,000	2	8.00	1	50.0	500.00	0	0
Cooperstown	*3,000	1	4.00	....	....	.....	0	0
Walton	3,540	1	.....	....	....	.....	0	0
Delhi	3,000	3	12.00	....	....	.....	0	0
Rest of district	.....	178	.....	17	9.4	55.55	0	4
WEST CENTRAL DISTRICT:								
Totals	.....	241	.....	28	11.6	58.30	0	9
AUBURN	*26,000	0	13.84	7	23.3	333.33	0	0
Ithaca	*10,000	9	.....	3	33.3	333.33	0	1
Waterloo	*4,500	1	.....	....	....	.....	0	0
Seneca Falls	*6,000	8	16.00	....	....	.....	0	0
Geneva	*6,000	12	24.00	3	25.0	.....	0	0
Canandaigua	*6,300	7	.....	....	....	.....	0	0
Manchester	*4,000	9	27.00	1	111.11	111.11	0	0
Phelps	*7,000	7	12.00	1	14.3	142.85	0	1
Penn Yan	*4,500	3	.....	....	....	....	0	0
Batavia	*7,000	5	.....	1	20.0	200.00	0	0
Dansville	3,700	5	16.22	....	....	.....	0	0
Le Roy	*5,000	7	16.80	....	....	.....	0	0
Rest of district	.....	138	.....	12	8.6	64.25	0	7
LAKE ONTARIO & WEST. DIST.:								
Totals	.....	832	.....	231	27.7	173.00	8	46
BUFFALO	*225,000	†401	16.38	160	40.0	182.50	6	25
Tonawanda	*5,000	11	26.40	3	27.3	272.73	0	1
Amherst	4,578	3	.....	....	....	666.66	0	2
LOCKPORT	*5,000	9	.....	1	11.1	222.22	0	0
Niagara	*7,000	7	12.00	1	14.3	142.85	0	0
Medina	4,000	6	18.00	2	33.3	166.67	0	0
Albion	*5,000	6	14.40	....	....	666.67	0	4
Brockport	4,500	1	....	....	....	.....	0	0
ROCHESTER	*138,327	148	12.80	37	....	.....	2	3
Palmyra	*4,800	3	.....	2	66.6	.....	0	0
Newark	3,500	1	.....	....	....	.....	0	0
Lyons	*6,000	6	12.00	1	16.7	166.67	0	1
Clyde	*3,000	1	.....	....	....	.....	0	0
OSWEGO	*24,000	27	13.50	3	11.1	111.11	0	2
Fulton	4,000	2	6.00	....	....	....	0	0
Richland	4,000	4	12.00	1	25.0	.....	0	0
Rest of district	.....	196	.....	20	9.8	136.00	0	8
Totals for the State	.....	7,709	.....	2,199	28 5	146.00	29	206
Average for Nov. for past five years	.....	6,777	.....	2,070	30.5	181.93	27	151

† For five weeks

REMARKS.—November is uniformly the healthiest month in the year, having the lowest death rate. The forty-two less deaths daily in November than the daily rate for the year, in 1888 there were fifty-three less, deaths each day for 1890 has been 305, and during November 257, a diminution of nearly fifty per diem. from all causes in October to 146 per 1,000 in November. It is also lower than the average for November, measles. As noted in the last bulletin, diphtheria always shows a marked rise in mortality in October. There were seventy-two more deaths from this cause than in October. Scarlet fever caused forty-two The increase in measles is moderate. The death rate, according to the reported mortality of 137 cities separately in the bulletin about thirteen, that of the reporting portion of the State (5,417,000 population)

FOR NOVEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory disease.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
2	0	3	0	0	1	2	5	39	36	3	19	12	29	40	12	18	34	43
1	0	2	0	0	1	4	3	2	11	1	1	5	5	8	1	10	1	23
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	1	2	0	2	2	0	0	2	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0
0	0	1	0	0	0	1	0	0	2	0	1	1	0	1	0	1	1	1
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	4	1	27	20	1	13	5	20	25	11	7	27	12
2	....	0	0	0	0	2	1	18	21	2	31	10	28	40	7	6	44	20
0	0	0	0	0	0	0	1	4	5	1	2	1	3	7	0	3	2	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	1	0	2	0	2	0	1	0	0	0
0	0	0	0	0	0	0	0	1	1	0	3	0	1	1	0	1	2	2
0	0	0	0	0	0	0	0	0	1	0	1	0	1	2	0	0	1	1
0	0	0	0	0	0	1	0	1	1	0	2	0	0	1	1	0	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	0
0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0
1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	3	1
1	0	0	0	0	0	1	0	8	11	1	18	8	21	20	3	2	27	10
11	....	12	9	4	0	44	9	111	87	3	67	34	47	105	25	51	44	114
4	0	1	7	2	0	23	5	52	35	1	32	14	19	56	14	22	0	83
1	0	1	0	0	0	0	0	2	1	0	1	0	0	2	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	3	0	0	0	0	0	2	0	0	2	0
0	0	0	0	0	0	1	0	1	3	0	0	0	0	0	0	0	2	0
0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	2
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1	0	2	0	2	1	14	1	19	17	0	11	9	4	24	5	9	6	18
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	9	4	0	2	1	3	3	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
4	0	6	2	0	0	5	2	24	25	2	18	6	18	16	5	18	31	6
68	0	102	74	17	62	442	124	1,207	984	74	518	435	554	851	208	387	469	958
74	4	100	62	20	54	607	124	999	923	65	373	379	491	704	173	285	485	673

ending November 29
average daily mortality for the past five years has been 263, that of November being 225. In 1889 there were
in 1887 there were twenty-one less and in 1886 there were nine less per day. The average number of
The mortality from zymotic diseases had decreased proportionally from 155 deaths in each 1,000 deaths
which is 182 per 1,000. All zymotic diseases show lower mortalities except diphtheria, scarlet fever and
and the average of five years shows a continuance of this increase through the succeeding two months.
more deaths than in October. A number of towns have recently reported outbreaks of these diseases,
and villages, is at the rate of about eighteen per 1,000 population, and of the rural towns not specified
being at the rate of seventeen per 1,000 annually.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the

Cities are printed in SMALL CAPITALS, villages in *italics*, and towns in Roman type. The census

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
MARITIME DISTRICT: Totals	.....	5,421	.....	1,896	35.0	145.75	11	54
NEW YORK CITY	*1,631,235	3,184	22.98	1,113	35.0	146.67	6	29
BROOKLYN	*852,467	1,684	23.25	630	37.4	159.15	5	20
Gravesend	*6,912	5	.....	2	40.0	200.00	0	0
New Utrecht	*5,000	10	24.00	3	30.0	.....	0	0
Flatbush	*8,000	24	36.00	0	....	125.00	0	0
LONG ISLAND CITY	*30,396	39	15.40	10	25.6	25.64	0	0
Newtown	*10,000	48	.....	21	43.6	125.00	0	0
Oyster Bay	*12,000	17	17.00	5	29.0	117.68	0	1
Hempstead	18,160	3	.....	1	....	.....	0	0
North Hempstead	8,000	13	19.50	3	23.1	.....	0	0
Jamaica	10,089	11	.....	4	36.4	272.72	0	0
Flushing	16,000	19	.....	4	11.0	105.50	0	0
Southold	7,500	5	.....	0	....	400.00	0	0
Sag Harbor	*3,000	3	12.00	0	....	.....	0	0
Huntington	8,100	16	24.30	2	12.5	.....	0	0
New Brighton	*15,000	26	20.80	8	30.7	38.37	0	0
Edgewater	12,000	24	24.00	9	37.5	166.67	0	0
Port Richmond	*3,600	1	.....	....	....	.....	0	0
Westfield	7,000	8	13.71	1	13.5	125.00	0	0
YONKERS	*31,949	66	24.70	29	43.9	121.21	0	0
Westchester	*7,000	11	18.85	1	9.1	91.90	0	1
Mount Vernon	*11,000	12	.....	3	25.0	83.33	0	0
Portchester	*5,583	8	17.20	1	12.5	125.00	0	0
Sing Sing	*6,500	14	25.84	3	21.4	.....	0	0
New Rochelle	*6,000	5	.....	3	60 0	.....	0	0
Peekskill	*7,000	15	26.00	4	24.6	62.50	0	0
Rest of district	.....	150	.....	40	26.4	114.28	0	3
HUDSON VALLEY DISTRICT: Totals	.....	891	.....	212	23.8	119.65	4	30
ALBANY	*103,000	178	20.73	47	26.1	115.00	0	6
COHOES	*22,432	37	19.50	10	27.0	270.20	0	6
TROY	*65,000	112	20.67	24	21 5	72.50	0	2
West Troy	*13,000	38	35.00	7	18.4	289.00	1	5
Green Island	*6,000	16	32.00	2	12.5	.....	0	0
Lansingburgh	*10,000	11	.....	3	27.3	.....	0	0
Hoosick Falls	*6,000	9	18.00	4	44.5	333.33	0	1
Greenbush	*8,000	8	12.00	3	37.5	.....	0	0
Coxsackie	4,000	4	12.00	0	....	.....	0	0
Catskill	*4,930	11	26.40	6	54.5	192 91	0	0
HUDSON	*10,000	19	22.80	5	26.3	105.26	0	0
KINGSTON	*21,000	37	21.15	10	27.0	135.00	0	0
Ellenville	3,000	6	24.00	0	....	.....	0	0
Marbletown	4,000	3	9.00	0	....	333.33	0	0
Esopus	4,736	2	.....	0	....	.....	0	0
Saugerties	*4,000	5	15.00	2	40.0	.....	0	0
POUGHKEEPSIE	*22,836	32	16.83	6	18.7	62.50	0	0
Fishkill	10,732	13	14.00	4	30.7	76.75	1	0
Wappinger Falls	*5,000	4	9.60	0	....	.....	0	0
NEWBURGH	*23,263	36	18.57	13	35.1	111.11	0	0
Port Jervis	*9,500	18	22.74	8	44.4	222.22	0	1
MIDDLETOWN	*11,918	16	16.20	2	12.5	62.50	0	1
Goshen	*4,500	5	13.33	1	20.0	.....	0	0

YORK STATE BOARD OF HEALTH.

following districts, cities and towns, during December, 1890.

populations preceded by a star (*) are estimated to date; the remainder are from the of 1880.]

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
38	0	113	100	23	55	341	55	1,194	677	52	288	328	353	555	144	171	153	716
19	0	52	75	15	30	193	46	685	440	32	157	213	194	269	86	107	60	476
15	0	54	17	6	20	123	8	407	178	17	92	90	126	200	38	43	45	180
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
0	0	0	0	0	0	0	0	2	1	0	0	1	0	2	1	0	1	2
0	0	0	0	0	0	3	0	8	0	0	4	0	3	5	1	0	0	0
0	0	0	0	0	0	1	0	13	2	1	5	1	1	3	2	2	2	6
0	0	1	1	1	0	3	0	13	5	0	2	3	3	8	1	0	2	5
0	0	0	0	0	1	0	0	1	5	0	1	0	0	3	2	0	1	2
0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	3	0	0	1	0	2	2	1	0	2	2
1	0	0	1	0	0	1	0	1	1	0	2	0	1	1	1	0	0	1
0	0	0	0	0	0	2	0	4	6	0	0	0	1	2	0	1	2	1
1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	2	3	0	2	1	2	2	0	0	4	0
0	0	0	0	0	0	1	0	7	1	0	1	0	1	4	0	3	6	2
0	0	1	0	0	0	5	0	4	3	0	2	1	1	3	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	3	1	0	0	2	0	1	0	0	0	0
1	0	0	4	0	0	3	0	15	6	1	7	6	5	9	0	1	1	7
0	0	0	0	0	0	0	0	3	3	0	0	0	1	2	0	0	1	0
0	0	1	0	0	0	0	0	0	1	0	0	0	2	2	2	0	2	2
0	0	1	0	0	0	0	0	2	1	0	1	0	0	1	0	1	0	1
0	0	0	0	0	0	0	0	1	2	0	0	2	1	2	0	0	1	5
0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0
0	0	0	0	0	0	1	0	1	2	0	2	0	2	2	0	2	0	3
1	0	2	2	1	3	5	0	17	15	1	9	7	5	28	7	10	18	16
6	0	0	0	2	10	46	8	206	104	6	68	43	74	109	32	18	58	67
0	0	0	0	1	1	9	4	36	30	0	15	9	16	9	7	3	5	27
0	0	0	0	0	0	3	1	5	5	0	5	0	4	4	3	0	1	0
0	0	0	0	0	1	5	0	36	10	0	8	3	4	20	3	2	7	11
2	0	0	0	0	0	3	0	9	4	1	3	1	2	5	1	0	0	1
0	0	0	0	0	0	0	0	8	1	0	1	1	2	0	0	0	3	0
0	0	0	0	0	0	0	0	2	0	0	1	0	3	5	0	0	0	0
0	0	0	0	0	1	1	0	1	0	0	0	0	2	0	0	0	1	2
0	0	0	0	0	0	0	0	1	0	0	2	0	2	0	0	0	0	3
0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	2	0	3	2	0	1	1	0	1	0	0	0	1
0	0	0	0	0	0	2	0	4	2	0	0	1	1	3	1	3	1	1
0	0	0	0	0	0	4	1	9	11	2	2	2	5	1	0	0	0	1
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	1
1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	0	0	0	0
1	0	0	0	0	0	1	0	5	1	0	4	3	3	9	0	0	2	3
0	0	0	0	0	0	0	0	3	0	0	1	2	1	2	0	0	1	2
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0
1	0	0	0	0	2	1	0	15	5	0	3	0	2	6	0	1	0	0
0	0	0	0	0	0	3	0	4	2	0	1	0	3	2	0	1	1	0
0	0	0	0	0	0	0	0	4	2	0	2	1	0	2	0	1	1	1
0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2	0	0	0

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
HUDSON VAL. DIST.—(*Cont'd*):								
Nyack	*5,000	8	19.20	2	25.0	.....	0	0
Ramapo	*5,000	6	14.40	...	....	.....	0	0
Rest of district	.....	257	.....	53	20.6	120.60	2	3
ADIROND'CK & NORTH'N DIST.:								
Totals	.....	287	.....	62	21.3	110.30	3	1
WATERTOWN	*14,733	16	12 37	6	37.5	187.50	0	0
Ellisburgh	4,811	4	10.00	....	....	.....	0	0
Clayton	4,314	6	16.72	2	33.3	.....	0	0
OGDENSBURGH	*12,000	20	20 00	6	30.0	100.00	0	0
Potsdam	*4,000	6	18.00	....	....	.....	0	0
Malone	*9,000	8	.....	2	50.0	500.00	0	0
Plattsburgh	*7,000	10	17.14	5	50.0	200.00	2	0
Glens Falls	*10,000	10	12.00	4	40 0	.....	0	0
Whitehall	*4,000	5	15.00	1	20.0	200.00	0	0
Fort Edward	*5,000	1	.....	....	....	.....	0	0
Fort Ann	4,267	1	.....	....	....	.....	0	0
Argyle	3,700	2	.....	1	50.0	500.00	0	0
Salem	3,500	2	7.00	....	....	.....	0	0
Greenwich	*4,000	4	12.00	....	....	.....	0	0
Rest of district	.....	192	.....	35	17.8	98.00	1	1
MOHAWK VALLEY DISTRICT:								
Totals	.....	395	... ..	70	17.5	107.50	1	13
SCHENECTADY	*20,000	54	32.40	19	35.4	203.70	1	5
Schoharie	3,350	7	25.07	1	14.3	142.85	0	0
Cobleskill	3,371	2	.....	....	....	.....	0	0
AMSTERDAM	*17,264	25	17.35	7	28.0	200.00	0	1
Fort Plain	3,500	5	17.15	....	....	.....	0	0
Johnstown	*6,000	7	14.00	1	14.3	142.85	0	0
GLOVERSVILLE	*13,845	17	14.75	3	17.7	294.10	0	0
Little Falls	*8,500	12	17.00	1	8.3	166.67	0	2
Herkimer	*3,000	3	12.00	1	33.3	.....	0	0
Ilion	*4,200	2	.....	....	....	.....	0	0
UTICA	*44,000	63	17.18	17	26.6	31.74	0	2
Whitestown	*5,000	3	7.20	1	33.3	333.33	0	0
ROME	15,000	18	14.40	3	16.7	111.11	0	0
Boonville	*4,000	7	21.00	2	18.5	.....	0	0
Camden	3,400	3	10.60	1	33.3	.....	0	0
Waterford	*5,400	7	15.55	1	14.3	.....	0	0
Balston Spa	3,200	1	.....	....	....	.....	0	1
Saratoga Springs	*10,000	16	19.20	....	....	.....	0	1
Rest of district	.....	143	.....	12	8.5	78.55	0	3
SOUTHERN TIER DISTRICT:								
Totals	.....	298	.....	60	20.0	143.35	2	13
BINGHAMTON	*35,000	39	13.37	7	18.0	179.48	0	1
Owego	*6,000	13	26.00	1	7.7	.....	0	0
Candor	4,323	6	16.75	2	33.3	500.00	0	2
Waverly	*5,000	7	16.80	....	....	142.85	0	0
ELMIRA	*28,000	36	15.42	8	22.2	250.00	2	0
HORNELLSVILLE	*10,000	18	21.60	4	22.2	222.22	0	3
Bath	3,500	1	.....	1	....	.....	0	0
CORNING	*8,553	11	15.43	4	36.4	181.81	0	0
Olean	*8,000	10	15.00	2	20.0	300.00	0	1
Salamanca	*6,000	6	12.00	2	33.3	166.67	0	0
JAMESTOWN	*15,838	18	13.50	4	22.2	.....	0	0
Westfield	3,000	2	8.00	....	....	.....	0	0
Fredonia	*3,000	3	12.00	....	....	333.33	0	1
Rest of district	.....	128	.....	25	19.2	95.32	0	5

FOR DECEMBER—(*Continued*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
0	0	0	0	0	0	0	0	1	0	0	1	2	0	3	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	1	1	3	0	0	0	0	0
1	0	0	0	1	5	12	2	53	25	2	16	15	17	34	14	6	31	13
1	0	2	1	2	0	19	3	38	33	3	20	10	23	33	9	11	45	30
0	0	0	0	0	0	1	2	2	1	0	2	0	0	1	0	2	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	2
0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	4
0	0	1	0	1	0	0	0	1	1	0	2	1	3	3	1	1	1	1
0	0	1	0	0	0	0	0	0	0	0	2	1	0	1	1	0	0	0
0	0	0	0	0	0	3	0	1	2	0	1	0	0	0	0	0	1	4
0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	1	0	1	2
0	0	0	0	0	0	0	0	4	0	0	0	0	2	1	0	0	1	2
0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	1	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	9	0	1	0	0	1	0	1	0	0	0	1	0
1	0	1	1	0	0	15	0	24	25	2	11	8	13	24	6	8	36	15
2	0	3	0	0	2	17	3	61	48	3	23	21	35	57	9	12	43	40
1	0	0	0	0	0	1	3	8	6	1	1	1	4	10	1	1	4	6
1	0	0	0	0	0	0	0	0	0	0	1	1	2	1	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	2	0	0	1	1	0	6	5	0	1	3	0	3	1	0	0	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	2	0
0	0	0	0	0	0	1	0	1	0	0	0	1	1	1	0	0	1	1
0	0	0	0	0	0	5	0	4	3	0	0	2	2	0	1	0	0	0
0	0	0	0	0	0	0	0	2	1	1	0	0	0	4	1	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
0	0	0	0	0	0	1	0	14	7	0	5	3	8	12	0	1	3	8
0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	2	0	4	4	0	2	0	0	0	0	0	3	3
0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	1	3	0	1	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	1	6	0	16	14	1	8	8	14	21	5	7	25	13
1	0	3	0	3	1	17	3	45	26	3	23	11	31	31	12	18	27	29
0	0	0	0	0	0	6	0	7	3	0	3	0	4	5	1	3	5	1
0	0	0	0	0	0	0	0	2	1	0	1	0	3	1	1	0	2	2
0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	1	0	2	0	1	0	0	0	2	0	0	0	1
0	0	0	0	0	0	5	2	6	5	1	2	4	0	3	2	1	2	2
0	0	1	0	0	0	0	0	3	1	0	1	1	2	0	0	2	0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	2	0	0	0	2	2	1	0	0	0	0	0	1	2	1
0	0	1	0	1	0	0	0	2	0	0	0	1	0	0	0	1	0	3
0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	0	1
0	0	0	0	0	0	0	0	5	3	0	1	1	2	2	1	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
1	0	1	0	0	0	4	1	13	11	0	14	4	19	18	7	7	14	9

	Population.	Total number of deaths.	Representing annual death rate per 1,000 of—	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.
EAST CENTRAL DISTRICT: Totals	.....	346	.....	55	15.8	48.56	1	9
SYRACUSE	*87,000	100	13.80	23	23.0	40.00	0	3
Baldwinsville	3,000	3	12.00	....	....	.....	0	0
Homer	*3,000	2	8.00	....	...	.....	0	0
Oneida	*6,018	10	20.00	3	30.0	10).00	0	0
Hamilton	*4,000	5	15.00	....	...	.....	0	0
Cazenovia	4,363	7	19.26	2	28.5	.....	0	0
Brookfield	3,685	.....	....	...	...	.....	0	0
Norwich	5,500	5	16.30	1	20.0	.....	0	0
Oneonta	*7,000	5	8.57	3	60.0	200.00	0	1
Worcester	*3,000	3	12.00	....	....	.....	0	0
Cooperstown	*3,000	2	8.00	....	...	.....	0	0
Walton	3,540	1	.....	....	....	.....	0	0
Delhi	3,000	4	16.00	....	....	.....	0	0
Rest of district	.....	199	.....	23	11.5	55.00	1	5
WEST CENTRAL DISTRICT: Totals	.....	292	.....	41	13.0	43.00	0	3
AUBURN	*26,000	35	16.15	3	8.5	28.57	0	1
ITHACA	*10,000	6	.....	1	16.7	166.69	0	0
Waterloo	*4,500	8	21.33	1	12.5	.....	0	0
Seneca Falls	*6,000	8	16.00	....	....	.....	0	0
Geneva	*6,000	12	24.00	8	66.7	.....	0	0
Manchester	*4,000	5	15	....	....	.....	0	0
Phelps	*7,000	4	.....	....	....	.....	0	0
Penn Yan	*4,500	5	13.33	1	20.0	.....	0	0
Batavia	*7,000	7	12.00	2	28.5	.....	0	0
Dansville	3,700	5	16.22	1	20.0	.....	0	0
Rest of district	.....	197	.....	24	12.0	55.20	0	2
LAKE ONTARIO & WEST. DIST.: Totals	....	831	.....	239	28.7	176.90	8	32
BUFFALO	*255,000	†343	18.90	148	43.2	250.73	6	14
Tonawanda	5,000	7	16.80	1	14.3	285.71	1	1
Amherst	4,578	7	18.26	2	28.5	714.28	0	3
LOCKPORT	*15,000	13	10.40	3	23.0	77.00	0	0
Niagara	*7,000	1	.....	1	....	.....	0	0
Medina	4,000	4	12.00	1	25.0	250.0	0	0
Albion	*5,000	5	12.00	1	20.0	400.0	0	1
Brockport	5,000	4	9.60	....	...	.....	0	0
ROCHESTER	*138,327	179	15.50	47	26.1	127.80	0	5
Palmyra	*4,800	8	20.00	1	12.5	.....	0	0
Newark	3,500	5	17.15	1	20.0	.....	0	0
Lyons	*6,000	11	22.00	1	9.1	.....	0	0
Clyde	*3,000	2	8.00	....	....	.....	0	0
OSWEGO	*24,000	32	16.00	7	18.4	62.53	0	1
Fulton	*4,000	1	.....	....	..	.....	0	0
Richland	4,000	6	18.00	1	16.7	166.67	0	0
Rest of district	.....	203	.....	24	12.0	130.00	1	7
Totals for the State	.....	8,761	.....	2,635	30.0	136.00	30	157
Average for Dec. for past five yrs.	.....	7,684	.....	2,418	31.5	177.39	27	134

† For four weeks

REMARKS.—The total reported mortality for December is about 1,000 more than in November, which is however, the increase being chiefly in diseases of the respiratory, nervous and circulatory organs. There The zymotic mortality is also a little higher than in either of these two months. Typhoid fever shows a Measles has also increased, but has a lower death rate than in the summer. Diphtheria has caused about villages is 21 60 per 1,000 population annually.

FOR DECEMBER — (*Concluded*).

Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.	Diarrheal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrheal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
1	0	2	0	1	0	2	1	55	44	5	24	12	36	40	16	16	42	39
0	0	0	0	0	0	0	1	21	14	0	2	6	12	10	5	5	4	17
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	1	3	2
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0
0	0	0	0	0	0	0	0	3	1	0	2	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	0	1	2	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0
1	0	1	0	1	0	2	0	27	26	4	19	4	17	26	10	9	30	16
1	0	5	0	0	2	2	0	33	35	1	32	18	37	38	10	15	38	22
0	0	0	0	0	0	0	0	6	4	0	2	2	7	3	0	2	4	4
0	0	0	0	0	1	0	0	1	1	0	1	1	0	0	0	1	0	0
0	0	0	0	0	0	0	0	1	2	0	1	1	2	1	0	0	0	0
0	0	0	0	0	0	0	0	1	2	0	2	0	0	0	1	0	2	0
0	0	0	0	0	0	0	0	1	1	0	1	0	3	3	1	0	0	2
0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	1	0	2	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	1	0	2	0	1	0	1
1	0	5	0	0	1	2	0	20	21	1	18	12	25	25	8	11	31	14
9	0	16	16	5	1	53	7	124	78	12	56	40	54	137	25	24	48	86
1	0	3	15	3	0	39	3	51	25	6	19	11	14	58	9	9	2	55
0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	2
0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0
1	0	0	0	0	0	0	0	4	1	0	0	1	2	0	1	0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0
0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0
0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	1	0
2	0	5	0	1	0	10	0	33	22	4	9	10	8	38	4	7	11	10
0	0	0	0	0	0	0	0	2	1	0	0	1	0	2	1	0	1	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	1
0	0	0	0	0	0	0	0	1	2	1	2	0	0	1	2	0	2	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	1	4	3	0	5	1	6	4	0	0	0	7
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	1	0	0	0	2	2	0	1	0	0	0	0	0	0	0
5	0	7	1	0	1	4	0	23	18	1	20	14	19	33	6	8	27	8
59	0	144	117	36	71	497	80	1,756	1,045	85	533	483	643	1,000	257	285	454	1,029
65	7	147	113	32	72	657	95	1,329	1,018	75	390	408	532	822	211	275	547	739

ending December 27.

always the healthiest month in the year. The number of deaths from zymotic diseases is but little greater were 500 more deaths from acute respiratory diseases and the number is greater than in December, 1889. falling off. Scarlet fever is increasing and has been since August, but has caused less than 150 deaths, fifty more deaths than in November and fifty less than in December, 1889. The death rate of 135 cities and

SUMMARY OF MORTALITY OF THE STATE OF NEW YORK, FOR THE YEAR 1890, AS PUBLISHED IN THE MONTHLY BULLETIN.

Totals of Mortality of the State by Months (including Delayed Returns).

MONTHS.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.
January	13,020	2,227	18.2	89.70	29	117	62	....	93	42	30	114	534
February	9,130	2,370	27.5	118.80	37	94	39	....	96	50	32	92	518
March	9,844	2,772	30.0	117.35	47	72	36	2	90	94	47	110	514
April	9,488	2,826	31.8	121.42	51	73	43	1	78	187	43	77	436
May	9,194	2,740	31.6	130.95	62	72	55	....	60	209	34	68	420
June	9,185	3,515	40.2	217.70	28	69	63	1	68	161	29	90	364
July	11,606	5,602	50.5	327.37	56	101	56	....	45	91	12	133	293
August	10,642	4,480	48.8	292.70	49	167	86	....	35	69	11	153	233
September	9,111	3,356	39.0	224.45	30	234	84	....	40	29	15	102	247
October	8,640	2,665	32.7	155.00	26	240	87	....	62	47	6	84	382
November	8,209	2,199	28.5	146.00	29	216	68	....	102	74	17	62	467
December	8,761	2,635	30.0	135.90	30	157	59	....	144	117	36	71	498
Totals for first six months	59,861	16,450	27.4	134.18	254	497	298	4	485	734	215	551	2,796
Totals for last six months	56,969	20,942	36.4	216.12	220	1,115	440	....	428	427	97	605	2,119
Totals for the year	116,830	37,392	31.6	169.00	474	1,612	738	4	913	1,161	312	1,156	4,915

SUMMARY OF MORTALITY, ETC. — (*Continued*).

MONTHS.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
January	98	3,847	1,801	95	542	553	724	1,107	277	333	653	1,969
February	82	1,950	1,304	74	477	415	556	927	209	264	515	1,399
March	94	1,929	1,238	99	511	471	709	1,051	235	314	520	1,661
April	97	1,781	1,138	75	599	484	691	1,046	220	330	460	1,578
May	142	1,538	1,077	95	539	508	691	999	273	371	436	1,554
June	1,087	972	984	83	679	497	541	1,000	237	452	347	1,438
July	2,916	706	1,073	60	1,024	497	543	1,092	242	553	395	1,718
August	2,192	666	1,064	70	871	442	537	1,125	236	512	375	1,749
September	1,196	710	1,027	47	768	418	520	871	236	375	450	1,712
October	360	1,001	1,061	71	635	485	597	884	238	366	470	1,538
November	124	1,207	1,019	74	518	435	554	851	208	387	409	1,388
December	80	1,756	1,046	85	533	483	643	1,000	257	285	454	1,029
Totals for first six months	1,600	12,617	7,542	521	3,347	2,928	3,912	6,130	1,451	2,064	2,931	9,594
Totals for last six months	6,868	6,046	6,289	407	4,349	2,760	3,394	5,823	1,417	2,478	2,553	9,134
Totals for the year	8,468	18,053	13,831	928	7,696	5,688	7,306	11,953	2,868	4,542	5,484	18,728

SUMMARY OF MORTALITY, ETC.—(*Continued*).

Totals of mortality in the several sanitary districts for the year.

DISTRICTS.	Total number of deaths.	Deaths under 5 years.	Percentage of deaths under 5 years to total deaths.	Zymotic deaths per 1,000 deaths from all causes.	Cerebro-spinal fever.	Typhoid fever.	Malarial diseases.	Small-pox.	Scarlet fever.	Measles.	Erysipelas.	Whooping cough.	Croup and Diphtheria.
Maritime district	67,512	26,781	39.5	186.07	170	625	444	2	562	972	216	681	3,314
Hudson Valley district	10,893	2,713	24.9	130.54	67	222	87	1	48	6	26	159	363
Adirondack and Northern district	3,825	795	20.5	126.01	19	51	12	0	12	25	10	32	145
Mohawk Valley district	5,178	1,151	22.2	169.75	32	159	32	0	41	21	9	20	273
Southern Tier district	3,854	786	20.3	158.28	23	91	22	0	30	35	8	58	136
East Central district	4,918	973	19.5	128.30	24	91	25	0	24	36	4	34	112
West Central district	3,660	602	16.4	119.12	15	64	17	1	24	55	9	28	60
Lake Ontario and Western District	11,120	3,860	34.7	170.68	107	250	89	0	64	109	29	43	363

SUMMARY OF MORTALITY, ETC.— (*Continued*).

DISTRICTS.	Diarrhœal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrhœal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Maritime district	5,576	7,504	8,621	586	4,379	3,886	3,872	6,691	1,543	2,507	1,518	10,468
Hudson Valley district	443	747	1,329	74	818	528	1,002	1,401	292	411	841	833
Adirondack and Northern district	166	554	415	38	298	130	287	370	115	132	454	370
Mohawk Valley district	292	693	582	41	403	228	414	694	154	209	491	400
Southern Tier district	207	539	345	42	292	131	323	451	139	239	444	299
East Central district	281	732	533	44	344	197	454	503	178	227	575	496
West Central district	163	466	391	21	291	200	361	440	144	153	509	250
Lake Ontario and Western district	844	1,623	1,180	80	889	389	693	1,417	313	564	653	1,419

SUMMARY OF MORTALITY, ETC.— (*Continued*).

DISTRICTS.	FROM TYPHOID FEVER.						FROM DIARRHŒAL DISEASES.					
	1885.	1886.	1887.	1888.	1889.	1890.	1885.	1886.	1887.	1888.	1889.	1890.
In each 1,000 deaths there were in the												
Maritime district	8.87	8.41	8.55	8.66	9.65	9.26	106.00	92.31	107.00	91.58	86.04	82.58
Hudson Valley district	27.85	27.28	27.27	32.22	23.14	20.36	62.63	63.48	71.30	67.18	61.30	40.64
Adirondack and Northern district	19.35	20.58	24.00	18.34	23.01	13.33	46.54	58.06	63.00	60.55	62.00	43.28
Mohawk Valley district	19.53	21.91	20.45	21.98	21.32	30.71	57.65	53.93	73.60	61.60	65.90	56.39
Southern Tier district	23.55	26.00	30.40	28.38	33.92	23.61	55.70	59.88	71.20	54.02	58.11	52.72
East Central district	19.64	27.45	20.50	28.65	24.00	18.50	59.74	51.20	56.60	72.71	80.65	57.34
West Central district	24.78	20.42	19.00	17.28	19.53	17.49	49.67	54.47	58.30	37.96	46 53	44.54
Lake Ontario and Western dist	20.85	19.18	19.45	23.07	21.28	21.58	60.00	80.27	113.10	99.43	88.63	75.90
The entire State	13.27	13.47	13.75	14.18	14.86	13.79	90.80	80.97	96.00	84.00	79.56	72.48

SUMMARY OF MORTALITY, ETC.—(*Concluded*).

DISTRICTS.	FROM DIPHTHERIA.						FROM CONSUMPTION.					
	1885.	1886.	1887.	1888.	1889.	1890.	1885.	1886.	1887.	1888.	1889.	1890.
In each 1,000 deaths there were in the												
Maritime district	58.28	71.43	75.40	67.95	63.00	49.10	143.58	140.52	121.80	124.10	123.20	127.72
Hudson Valley district	64.87	61.93	58.50	64.27	65.00	13.30	144.83	137.00	134.85	114.20	130.92	121.92
Adirondack and Northern district	72.08	43.35	49.00	46 57	33.87	37.90	147.82	137.90	122.00	110.91	121.76	108.50
Mohawk Valley district	44.74	36.80	67.40	65.52	52.12	52.72	143.67	132.30	111.25	115.36	113.50	112.40
Southern Tier district	27.57	41.03	44.40	34.18	34.84	35.28	114.25	100.95	94.40	100.73	88.49	89.50
East Central district	32.64	40.34	30.60	43.10	33.79	22,78	139.93	131.52	118.40	110.61	110.95	108.78
West Central district	22.63	20.42	30.80	23.38	27.07	16.38	155.08	141.08	115.40	112.20	110.35	106.83
Lake Ontario and Western dist	49.53	58.25	58.67	51.09	35.78	32.64	130.00	125.77	105.55	103.60	104.46	106.12
The entire State	56.06	64.48	67.24	61.73	56.12	42.07	139.76	137.66	120 35	118.55	120.01	118.37

REMARKS.—The sanitary districts into which the State is divided are as follows: Maritime District: Includes New York, Long Island Staten Island and Westchester county. Hudson Valley District: All the counties on either side of the Hudson river except Westchester, to and including Albany and Rensselaer. Adirondack and Northern District: The northern section of the State—the counties of Washington, Warren, Hamilton, Essex, Clinton, Franklin, St. Lawrence, Jefferson and Lewis. Mohawk Valley District: Schenectady, Schoharie, Saratoga, Montgomery, Fulton, Herkimer and Oneida counties. Southern Tier District: The seven counties along the southern border of the State. East Central District: Sullivan, Delaware, Otsego, Madison, Chenango, Onondaga and Cortland counties. West Central District: Cayuga, Tompkins, Seneca, Schuyler, Ontario, Yates, Livingston Genesee and Wyoming counties. Lake Ontario and Western District: Oswego, Wayne, Monroe, Orleans, Niagara and Erie counties.

There have been 116,830 deaths reported during the year in the Monthly Bulletin, this including about 5,000 returns of deaths that have been received up to the close of the year too late for insertion in the monthly issues. If to these are added 800 deaths which are estimated, at the rate of sixteen per 1,000 population, to have occurred in rural towns aggregating 50,000 population which failed to make any report, we have as the total mortality for the year 127,630 deaths. This gives as the death rate for the year, 19 60 deaths per 1,000 population, the population of the State being about 6,000,000.

The zymotic death rate for the first six months is 124.18 per 1.000 deaths from all causes; of the last six months 216.12, and of the entire year 169 00. This is less than it has been for five years, the average zymotic mortality of which is 217.00 per 1,000 deaths from all causes. This discrepancy is partly due to the epidemic of influenza which prevailed during the early part of the year and which is estimated to have caused at least 5,000 deaths, but few of which are credited to zymotic deaths. The actual zymotic mortality was, however, less than usual, being 19,753, that of 1889 being 22,179. Small-pox the State was almost entirely free from throughout the year, but two deaths, besides two in New York city, occurring, in Cohoes and Dansville early in the year. Diphtheria has caused fewer deaths than in several years, the total mortality from this cause being nearly 1,000 less than in 1889, and the death rate from it has been diminishing for three years. It caused 4.2 per cent of all deaths. The largest mortality occurred in those districts having the largest city population. Typhoid fever was lower than in either of the two preceding years and caused about 1.3 per cent of the total mortality. Scarlet fever caused hardly one-third the actual number of deaths that occurred in either of the two years preceding; there were about fifteen deaths in each 100,000 population during the year. Measles caused more deaths than scarlet fever and a greater mortality than in either 1888 or 1889. From consumption there was a smaller proportion of deaths than usual, in each 1,000 deaths 118.37 being from this cause. There were 18,000 deaths from acute respiratory diseases, which is greatly in excess of previous years; a large proportion of the deaths from epidemic influenza fell upon this group, from which cause also the proportions of digestive, nervous and all local diseases were increased.

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, FOR THE YEAR 1890, SHOWING TOTAL DEATHS FROM ALL CAUSES, AND DEATHS FROM PRINCIPAL ZYMOTIC DISEASES.

[An asterisk (*) denotes town and village; cities are printed in SMALL CAPITALS and villages in *italics*.]

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Adams, Jefferson county	48	.....	....	....	....	....	....	....	1	1
Addison, Steuben county	37	.....	....	....	....	....	1	....	2	.....
Alabama, Genesee county	16	.....	...	....	...	....	....	....	..	1
ALBANY, Albany county	2,265	17	62	3	13	....	50	91	124	327
Albion,* Orleans county	22	.....	....	....	....	....	....	....	....	1
Albion, Oswego county	30	2	1	....	1	....	....	3	2	1
Alden, Erie county	37	.....	....	....	....	....	1	....	2	.....
Alexander, Genesee county	26	.....	2	....	....	....	....	....	....	1
Alexandria, Jefferson county	44	1	....	....	....	....	....	....	....	2
Alfred, Allegany county	12	.....	....	....	....	....	1	....	....	.....
Allegany, Cattaraugus county	43	.....	....	1	....	....	....	1	....	2
Allen, Allegany county	6	.....	....	....	....	....	....	....	...	.....
Alma, Allegany county	.....	.....	....	...	....	....	....	....	....	.....
Almond, Allegany county	21	.....	....	....	1	....	....	....	....	2
Altona, Clinton county	1	.....	....	....	....	....	....	....	....	.....
Amboy, Oswego county	6	.....	....	....	....	....	....	....	....	.....
Amenia, Dutchess county	45	.....	....	....	....	....	1	....	1	4
Amherst, Erie county	75	.....	6	....	....	....	....	5	3	6

Amity, Allegany county	27									1
Amsterdam, Montmomery county	274	2	10		3	1	1	28	42	35
Amsterdam, Montgomery county	35									
Ancram, Columbia county	21								1	3
Andes, Delaware county	35		1						1	1
Andover, Allegany county	27		2							2
Angelica, Allegany county	24									
Annsville, Oneida county	39							1	2	1
Antwerp, Jefferson county	59									
Arcade,* Wyoming county	24									1
Arcadia, Wayne county	42					2			1	5
Argyle, Washington county	43									1
Arietta, Hamilton county	4		1							
Arkwright, Chautauqua county	4			1						
Ashford, Cattaraugus county	10									
Ashland, Chemung county	14									
Ashland, Greene county	10									
Athens, Greene county	24		1							
Attica, Wyoming county	43			1	1				1	2
Auburn, Cayuga county	582	6	10	3	8	31	9	18	18	86
Augusta, Oneida county	27									2
Aurelius, Cayuga county	28									
Aurora, Erie county	67		1						2	4
Ausable, Clinton county	33			1				5	1	1
Austerlitz, Columbia county	11								1	2
Ava, Oneida county	12								1	
Avoca, Steuben county	13									
Avon, Livingston county	36				1					3
Babylon, Suffolk county	74	1	1					1		4
Bainbridge, Chenango county	29									1
Baldwin, Chemung county	5									

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC. — (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Baldwinsville, Onondaga county	24	.....	....	....	....	1	....	....	1	5
Ballston, Saratoga county	24	.....	....	....	....	....	3	....	2	.....
Ballston Spa, Saratoga county	73	1	3	....	....	....	1	1	2	8
Bangor, Franklin county	48	.....	....	...	....	...	....	2	1	1
Barker, Broome county	14	.....	....	....	....	....	....	....	....	1
Barre, Orleans county	27	.....	...	....	....	....	...	....	2	.....
Barrington, Yates county	4	.....	....	....	....	....	....	....	....	.....
Barton, Tioga county	23	.....	....	....	....	....	....	1	....	1
Batavia, Genesee county	7	.....	....	....	....	....	...	1	....	1
Batavia, Genesee county	86	1	1	2	....	....	1	8	4	6
Bath, Steuben county	118	.....	1	....	....	....	....	....	1	4
Bath, Steuben county	40	.....	1	....	....	....	....	1	....	8
Bedford, Westchester county	27	.....	....	....	....	....	....	....	....	1
Beekman, Dutchess county	24	.....	....	....	....	....	2	....	....	1
Beekmantown, Clinton county	22	.....	....	....	....	....	....	...	...	2
Belfast, Allegany county	14	.....	....	....	....	....	....	....	....	.....
Bellmont, Franklin county	22	1	...	....	....	....	....	....	....	.....
Bennington, Wyoming county	4	.....	....	....	....	....	...	....	....	.....
Benson, Hamilton county	.....	.....	....	....	....	....	....	....	....	... .
Benton, Yates county	25	.....	....	....	....	....	1	....	....	1
Bergen, Genesee county	28	.....	....	....	....	....	....	....	1	2

Berkshire, Tioga county	10	.....	....	....	....	....	....	....	....	.....
Berlin, Rensselaer county	23	.....	....	....	....	....	....	....	....	.....
Berne, Albany county	27	.....	....	....	....	....	....	....	....	.....
Bethany, Genesee county	12	.....	....	....	....	....	....	....	....	.....
Bethel, Sullivan county	35	.....	....	....	....	....	....	....	1	1
Bethlehem, Albany county	62	.....	3	....	....	....	....	1	....	1
Big Flats, Chemung county	9	.....	....	....	....	....	....	....	....	.....
BINGHAMTON, Broome county	545	2	21	3	1	9	10	27	28	86
Binghamton, Broome county	58	.....	....	....	....	....	....	....	....	3
Birdsall, Allegany county	8	.....	....	1	....	....	....	....	....	.....
Black Brook, Clinton county	18	.....	....	....	....	....	....	4	....	.....
Bleecker, Fulton county	7	.....	....	....	....	....	....	....	....	.....
Blenheim, Schoharie county	7	.....	....	....	....	....	....	....	....	.....
Blooming Grove, Orange county	46	.....	....	....	....	....	....	2	3	2
Bolivar, Allegany county	13	.....	....	....	....	....	....	....	2	.....
Bolton, Warren county	21	.....	....	....	....	....	....	....	....	1
Bombay, Franklin county	11	.....	....	....	....	....	....	....	....	1
Boonville, Oneida county	51	.....	....	....	....	....	....	2	....	4
Boston, Erie county	27	.....	....	....	....	1	....	....	....	2
Bovina, Delaware county	5	.....	....	....	....	....	....	....	....	.....
Boylston, Oswego county	12	.....	....	....	....	....	....	....	....	.....
Bradford, Steuben county	.....	.....	....	....	....	....	....	....	....	.....
Brandon, Franklin county	8	.....	....	....	....	....	1	....	....	2
Brandt, Erie county	16	.....	....	....	....	....	....	2	....	.....
Brasher, St. Lawrence county	10	.....	....	....	....	....	....	....	....	4
Bridgewater, Oneida county	17	.....	....	....	....	....	....	....	....	1
Brighton, Franklin county	2	.....	....	....	....	....	....	....	....	.....
Brighton, Monroe county	147	.....	1	....	....	....	....	1	5	21
Bristol, Ontario county	17	.....	....	....	....	....	....	....	....	2
Broadalbin, Fulton county	40	.....	....	....	....	....	1	1	....	2
Brockport, Monroe county	50	.....	1	....	....	....	1	....	3	9

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Champion, Jefferson county	21								1	1
Champlain, Clinton county	15									2
Charleston, Montgomery county	13									1
Charlotte, Chautauqua county	20									1
Charlton, Saratoga county	20									
Chateaugay, Franklin county	8					1				1
Chatham, Columbia county	90	1						4	1	3
Chautauqua, Chautauqua county	26	1	1						1	
Chazy, Clinton county	10									
Cheektowaga, Erie county	58		1							2
Chemung, Chemung county	20									1
Chenango, Broome county	16	1								1
Cherry Creek, Chautauqua county	12									
Cherry Valley, Otsego county	8									1
Chester, Orange county	33									
Chester, Warren county	22	1								
Chesterfield, Essex county	117		3			4		14	2	5
Chili, Monroe county	20	1								2
Cicero, Onondaga county	34							1		1
Cincinnatus, Cortland county	8									
Clare, St. Lawrence county	3							1		

Clarence, Erie county	40	.....	1	....	1	....	....	....	1	5
Clarendon, Orleans county	28	.....	1	....	...	....	....	....	...	.....
Clarkson, Monroe county	4	.....	....	....	....	....	...	....	....	.....
Clarkstown, Rockland county	65	.....	2	....	....	....	....	....	1	2
Clarksville, Allegany county	7	.....	....	....	....	....	....	....	....	.....
Claverack, Columbia county	78	.....	....	....	....	....	....	1	....	9
Clay, Onondaga county	40	.....	....	....	....	....	....	....	2	.....
Clayton, Jefferson county	56	.....	...	2	....	....	....	....	5	7
Clermont, Columbia county	4	.....	...	....	....	....	....	....	....	.....
Clifton, St. Lawrence county	1	.....	....	....	....	....	....	....	....	.....
Clifton Park, Saratoga county	35	.....	3	....	....	....	....	....	....	1
Clinton, Clinton county	10	.....	2	....	....	....	....	....	....	.....
Clinton, Dutchess county	20	.....	....	....	....	....	....	....	....	1
Clyde, Wayne county	58	.....	1	...	1	1	....	1	1	9
Clymer, Chautauqua county	.....	.....	....	....	....	....	....	....	....	.....
Cobleskill, Schoharie county	48	.....	1	....	....	....	....	1	2	12
Cochecton, Sullivan county	12	.....	.	....	....	...	....	....	....	....
Coeymans, Albany county	49	.....	1	....	....	....	....	....	....	4
Cohocton, Steuben county	19	.....	1	....	....	....	....	....	1	2
Cohoes, Albany county	401	1	21	....	2	....	15	18	25	46
Colchester, Delaware county	6	.....	....	....	....	....	....	....	....	2
Colden, Erie county	20	.....	....	....	....	....	....	....	1	.....
Cold Spring, Cattaraugus county	4	.....	....	....	....	....	....	....	....	....
Colesville, Broome county	34	.....	....	....	....	....	....	...	....	3
Collins, Erie county	19	.....	....	....	....	....	....	1	1	.....
Colton, St. Lawrence county	16	.....	....	....	....	....	....	....	....	.....
Columbia, Herkimer county	6	.....	....	....	....	....	....	....	....	1
Columbus, Chenango county	21	.....	....	....	...	....	....	1	....	1
Concord, Erie county	58	.....	1	....	....	....	....	....	....	4
Conesus, Livingston county	11	.....	....	....	....	....	....	....	....	1
Conesville, Schoharie county	18	.....	....	....	....	....	....	....	1	.....

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Champion, Jefferson county	21	.....	....	....	....	....	....	....	1	1
Champlain, Clinton county	15	.....	...	....	....	....	....	....	....	2
Charleston, Montgomery county	13	.....	....	....	....	....	....	....	...	1
Charlotte, Chautauqua county	20	.....	....	....	....	....	....	....	....	1
Charlton, Saratoga county	20	.....	....	....	....	...	....	....	....	.....
Chateaugay, Franklin county	8	.....	....	....	....	1	....	....	....	1
Chatham, Columbia county	90	1	..	....	....	....	....	4	1	3
Chautauqua, Chautauqua county	26	1	1	....	....	....	....	....	1	.....
Chazy, Clinton county	10	.....	....	....	....	....	....	....	....	.....
Cheektowaga, Erie county	58	.....	1	....	....	....	....	....	....	2
Chemung, Chemung county	20	.....	....	....	....	...	....	....	..	1
Chenango, Broome county	16	1	....	....	....	....	....	....	....	1
Cherry Creek, Chautauqua county	12	.....	....	...	....	....	....	....	....	.....
Cherry Valley, Otsego county	8	.....	....	....	....	....	....	....	....	1
Chester, Orange county	33	.....	....	...	....	....	....	....	....	.....
Chester, Warren county	22	1	....	....	....	....	....	....	....	.....
Chesterfield, Essex county	117	.....	3	....	....	4	....	14	2	5
Chili, Monroe county	20	1	....	....	....	....	....	....	....	2
Cicero, Onondaga county	34	.....	....	....	....	....	....	1	....	1
Cincinnatus, Cortland county	8	.....	....	....	...	....	....	....	...	.....
Clare, St. Lawrence county	3	.....	....	....	....	....	....	1	....	.....

Clarence, Erie county	40	.....	1	....	1	....	....	....	1	5
Clarendon, Orleans county	28	.....	1	....	...	....	....	....	...	.....
Clarkson, Monroe county	4	.....	....	...	....	....	...	....	....	.....
Clarkstown, Rockland county	65	.....	2	....	....	....	....	....	1	2
Clarksville, Allegany county	7	.....	....	....	....	....	....	....	....	.....
Claverack, Columbia county	78	.....	....	....	...	....	....	1	....	9
Clay, Onondaga county	40	.....	...	....	....	....	....	....	2	.....
Clayton, Jefferson county	56	.....	...	2	....	....	....	....	5	7
Clermont, Columbia county	4	.....	...	....	....	....	....	....	....	.....
Clifton, St. Lawrence county	1	.....	....	....	....	....	....	....	....	.....
Clifton Park, Saratoga county	35	.....	3	....	....	....	....	....	....	1
Clinton, Clinton county	10	.....	2	....	....	....	....	....	....	.....
Clinton, Dutchess county	20	.....	....	....	....	....	....	. ..	....	1
Clyde, Wayne county	58	.....	1	...	1	1	....	1	1	9
Clymer, Chautauqua county	.....	.....	....	....	....	....	....	...	....	.....
Cobleskill, Schoharie county	48	.....	1	....	....	....	....	1	2	12
Cochecton, Sullivan county	12	.....		....	....	...	....	....	....	... .
Coeymans, Albany county	49	.....	1	....	....	....	....	....	....	4
Cohocton, Steuben county	19	.....	1	....	....	....	....	....	1	2
Conors, Albany county	401	1	21	....	2	....	15	18	25	46
Colchester, Delaware county	6	.....	....	....	....	....	....	....	....	2
Colden, Erie county	20	.....	....	....	....	....	....	....	1	.....
Cold Spring, Cattaraugus county	4	.....	....	....	...	....	....	....	....	....
Colesville, Broome county	34	.....	....	....	....	....	....	...	....	3
Collins, Erie county	19	.....	....	....	....	....	....	1	1	.....
Colton, St. Lawrence county	16	.....	....	....	....	....	....	....	....	.....
Columbia, Herkimer county	6	.....	...	....	....	....	....	...	....	1
Columbus, Chenango county	21	.....	....	....	...	....	....	1	....	1
Concord, Erie county	58	.....	1	....	....	....	....	....	....	4
Conesus, Livingston county	11	.....	....	....	....	....	....	....	....	1
Conesville, Schoharie county	18	.....	....	....	....	....	....	....	1	.....

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Conewango, Cattaraugus county	1	.....	....	....	....	....	....	....	...	.....
Conklin, Broome county	15	.....	....	...	....	....	1	....	1	1
Conquest, Cayuga county	23	.....	....	....	....	....	....	1	....	2
Constable, Franklin county	22	.....	....	....	....	1	....	1	....	1
Constantia, Oswego county	35	1	....	....	1	...	....	2	....	6
Cooperstown, Otsego county	22	.....	...	....	....	....	1	....	....	4
Copake, Columbia county	20	.....	...	....	1	....	....	....	....	2
Corinth, Saratoga county	27	.....	....	....	...	....	....	....	....	1
Corning, Steuben county	7	.....	....	....	...	....	....	....	....	.....
Cornwall, Orange county	67	.....	....	....	....	....	....	10	....	.....
Cortland, Cortland county	.....	.....	....	....	....	....	....	....	....	.....
Cortlandt, Westchester county	122	.....	....	....	....	1	....	1	4	3
Cortlandville, Cortland county	57	.....	....	....	....	....	....	....	....	3
Coventry, Chenango county	17	.....	....	....	....	....	....	2	1	.....
Covert, Seneca county	30	.....	....	....	...	....	....	....	....	1
Covington, Wyoming county	14	.....	....	...	...	....	....	....	....	.....
Coxsackie, Greene county	62	2	....	....	....	....	1	1	7	4
Crawford, Orange county	14	.....	....	....	....	...	....	....	....	.....
Croghan, Lewis county	25	.....	....	....	....	....	....	....	. .	.....
Crown Point, Essex county	8	.....	....	....	....	...	....	....	....	.....
Cuba, Allegany county	.....	.....	....	....	....	....	....	....	...	.....

Cuyler, Cortland county	20		1							1
Danby, Tompkins county	8								1	
Dannemora, Clinton county	19									12
Dansville, Steuben county	9									
Danube, Herkimer county	19									
Darien, Genesee county	12									1
Davenport, Delaware county	23								2	1
Day, Saratoga county	4									
Dayton, Cattaraugus county	9									
Decatur, Otsego county	6									1
Deerfield, Oneida county	26	1							1	
Deerpark, Orange county	24								1	1
DeKalb, St. Lawrence county	23									
Delaware, Sullivan county	15								1	1
Delhi, Delaware county	46		2							9
Denmark, Lewis county	30									1
Denning, Ulster county	10				1			3		
Deposit, Delaware county	32									2
DePeyster, St. Lawrence county	18									2
DeRuyter, Madison county	20									1
DeWitt, Onondaga county	42			1		1			2	2
Diana, Lewis county	16									
Dickinson, Franklin county										
Dix, Schuyler county	45							1	1	3
Dover, Dutchess county	24									1
Dresden, Washington county	8									
Dryden, Tompkins county	39									
Duane, Franklin county	9		1							
Duanesburgh, Schenectady county	24		1							2
Dundee, Yates county	12									1
DUNKIRK, Chautauqua county										

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued.*)

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Durham, Greene county	36									1
Eagle, Wyoming county	15									1
East Bloomfield, Ontario county	14		1			1		1		1
East Chester, Westchester county	212	2						18	29	13
East Fishkill, Dutchess county	33									3
East Greenbush, Rensselaer county	33		2					3	1	1
East Hamburgh, Erie county	46		1							1
Easthampton, Suffolk county	38						1			1
Easton, Washington county	30		1		1					1
East Otto, Cattaraugus county	20						1		1	
Eaton, Madison county	51	1	2							3
Eden, Erie county	36					1				2
Edgewater, Richmond county	212		3	3	2		1	22	5	29
Edinburgh, Saratoga county	17	1								1
Edmeston, Otsego county	23		1							1
Edwards, St. Lawrence county	23									
Elba, Genesee county	22				1				1	2
Elbridge, Onondaga county	68				1					6
Elizabethtown, Essex county	21			1						2
Ellenburgh, Clinton county	19							3		3
Ellenville, Ulster county	32								1	8

Ellery, Chautauqua county	13	.....	....	....	....	....	....	....	....
Ellicott, Chautauqua county	17	.....	....	....	2	....	....	....	....
Ellicottville, Cattaraugus county	26	.....	....	....	....	....	....	....	1
Ellington, Chautauqua county	8	.....	....	....	....	....	....	....	1
Ellisburgh, Jefferson county	79	.....	....	....	....	....	....	....	....
Elma, Erie county	21	.....	1	1	1	....	1	....	2
ELMIRA, Chemung county	511	2	9	4	5	2	13	42	51	43
Elmira, Chemung county	16	.....	....	....	....	....	....	....	....	....
Enfield, Tompkins county	16	.....	....	....	....	....	....	....	....	....
Ephratah, Fulton county	3	.....	....	....	....	....	....	....	....	1
Erin, Chemung county	9	.....	....	....	....	....	....	....	....	....
Erwin, Steuben county	22	.....	1	....	....	....	1	2	..	1
Esopus, Ulster county	70	.....	....	2	....	....	6	4	9	9
Esperance, Schoharie county	22	.....	....	....	1	....	....	....	....	3
Essex, Essex county	20	.....	....	....	....	....	....	....	....	1
Evans, Erie county	32	1	....	....	....	....	2	1	....	2
Exeter, Otsego county	22	.....	1	....	....	....	....	....	....	1
Fabius, Onondaga county	35	1	....	....	....	....	1	....	....	1
Fairfield, Herkimer county	10	.....	....	....	....	....	1	2	....	....
Fallsburgh, Sullivan county	13	.....	..	....	....	....	....	....	....	....
Farmersville, Cattaraugus county	10	.....	....	....	....	....	....	....	....	....
Farmington, Ontario county	10	1	....	....	....	1	....	....	....	....
Fayette, Seneca county	24	.....	....	....	....	....	....	....	....	2
Fenner, Madison county	11	.....	1	....	....	....	....	....	....	....
Fenton, Broome county	21	.....	....	....	....	....	....	....	....	1
Fillmore, Allegany county	2	.....	....	....	....	....	....	....	....	....
Fine, St. Lawrence county	4	.....	....	....	....	....	....	....	....	....
Flatbush, Kings county	742	.....	11	....	2	5	....	17	161
Flatlands, Kings county	95	.....	4	1	2	5	....	1	6
Fleming, Cayuga county	19	.....	....	....	....	1	....	....	....
Florence, Oneida county	30	.....	....	....	....	....	5	....	4

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Florida, Montgomery county	20	.....	....	...	....	....	...	....	....	.....
Floyd, Oneida county	10	.....	....	....	....	...	....	....	....	1
Flushing, Queens county	144	.....	....	....	2	....	....	2	1	14
Forestburgh, Sullivan county	8	.....	....	....	.. .	....	....	....	....	.....
Forestport, Oneida county	25	.....	....	....	....	....	....	....	....	.....
Fort Ann, Washington county	37	.....	....	....	....	.. .	....	....	....	3
Fort Covington, Franklin county	42	1	1	....	....	....	....	8	1	1
Fort Edward, Washington county	59	.....	1	....	....	....	....	....	3	11
Fort Plain, Montgomery county	.....	.....	....	....	....	....	....	....	....	.....
Fowler, St. Lawrence county	20	.....	....	....	....	....	....	....	1	4
Franklin, Delaware county	38	.....	....	....	....	....	...	....	1	6
Franklinville, Cattaraugus county	30	.....	2	....	....	....	....	....	1	2
Frankfort, Herkimer county	37	.....	1	....	....	....	....	....	1	3
Fredonia, Chautauqua county	46	.....	1	...	1	...	....	....	1	4
Freedom, Cattaraugus county	30	.....	....	....	....	....	....	...	....	.....
Freetown, Cortland county	9	.....	...	....	....	....	....	....	....	.....
Fremont, Sullivan county	1	.....	....	....	....	....	....	....	....	.....
French Creek, Chautauqua county	1	.....	...	....	....	....	...	....	....	.....
Friendship, Allegany county	25	.....	....	....	....	....	....	....	....	.....
Fulton, Schoharie county	37	1	1	....	....	....	....	....	2	3
Fulton, Oswego county	16	.....	....	....	....	....	....	....	....	.....

Gaines, Orleans county	35	.....	...	....	....	....	....	....	3
Gainesville, Wyoming county	29	.....	...	....	....	....	....	....	2
Galen, Wayne county	25	.....	....	....	....	....	....	....	1
Gallatin, Columbia county	11	.....	....	....	....	....	....	....	2
Galway, Saratoga county	24	.....	....	....	....	....	....	....	.....
Gardiner, Ulster county	22	.....	1	....	....	....	....	....	1
Gates, Monroe county	27	.....	1	....	....	....	1	....	.....
Geddes, Onondaga county	21	.....	....	....	....	....	1	4	3
Genesee, Allegany county	.....	.....	...	....	....	....	....	....	.....
Genesee Falls, Wyoming county	11	.....	....	....	...	....	....	....	.....
Geneseo, Livingston county	23	.....	....	....	....	....	....	....	5
Geneva, Ontario county	13	.....	....	....	....	....	....	....	.....
Geneva, Ontario county	153	1	2	1	....	3	....	15	14
Genoa, Cayuga county	21	.....	....	....	....	....	....	....	1
Georgetown, Madison county	16	.....	....	....	....	....	....	....	.....
German, Chenango county	.....	.....	....	....	....	....	....	....	.....
German Flats, Herkimer county	16	1	....	....	...	....	....	....	1
Germantown, Columbia county	24	.....	1	....	....	....	1	....	2
Gerry, Chautauqua county	9	.....	....	....	....	....	1	....	3
Ghent, Columbia county	40	.....	1	....	....	....	...	1	5
Gilboa, Schoharie county	24	.....	2	....	....	....	....	....	3
Glen, Montgomery county	22	.....	....	....	....	....	....	....	2
Glens Falls, Warren county	142	.....	1	1	....	....	1	13	16	14
Glenville, Schenectady county	32	.....	1	....	....	....	....	2	....	2
Gloversville, Fulton county	204	.....	7	2	4	1	2	19	18	23
Gorham, Ontario county	19	.....	3	....	....	....	....	....	1	1
Goshen, Orange county	107	1	2	1	....	....	1	9	1	18
Gouverneur, St Lawrence county	43	1	2	....	....	....	5	3	1	6
Grafton, Rensselaer county	17	.....	....	....	....	....	....	....	....	2
Granby, Oswego county	74	.....	2	1	....	....	....	....	1	8
Grand Island, Erie county	24	.....	1	....	....	....	....	....	....	1

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Granger, Allegany county	12	.....	...	....	....	....	....	....	....	.....
Granville, Washington county	73	1	1	...	....	....	....	....	1	7
Gravesend, Kings county	134	... ..	....	....	1	....	2	12	31	14
Great Valley, Cattaraugus county	12	.....	....	....	....	....	....	....	....	1
Greece, Monroe county	27	.....	....	....	....	....	....	....	1	2
Greenburgh, Westchester county	178	1	....	1	2	1	1	6	10	10
Greenbush, Rensselaer county	4	.....	....	...	....	....	....	....	....	2
Greene, Chenango county	37	.....	....	....	....	....	....	....	....	1
Greenfield, Saratoga county	32	.....	....	....	....	....	....	....	....	.....
Green Island, Albany county	84	.....	1	....	....	....	1	3	6	5
Greenport, Columbia county	11	.....	....	....	....	....	....	1	2	.....
Greenville, Greene county	44	.....	1	....	....	....	....	....	....	.....
Greenville, Orange county	1	.....	....	....	....	....	....	....	....	.....
Greenwich, Washington county	13	.....	....	....	....	....	....	....	....	1
Greenwood, Steuben county	12	.....	....	....	....	....	....	....	....	.....
Greig, Lewis county	11	1	....	....	....	....	....	....	....	.....
Groton, Tompkins county	46	.....	....	....	3	....	....	....	....	1
Grove, Allegany county	7	.....	....	...	....	....	....	....	1	.....
Groveland, Livingston county	10	.....	....	....	....	....	....	....	....	.....
Guilderland, Albany county	25	.....	1	....	....	....	2	1	....	4
Guilford, Chenango county	40	.....	....	....	....	...	....	....	....	3

Hadley, Saratoga county	6									
Hague, Warren county	3									
Halcott, Greene county	3									
Half Moon, Saratoga county	72									
Hamburgh, Erie county	59			1	1	1		3		7
Hamden, Delaware county	12									
Hamilton, Madison county	57	1		1	1	1		1	1	2
Hamlin, Monroe county	36		1							6
Hammond, St. Lawrence county	19									
Hampton, Washington county	11		1							
Hamptonburgh, Orange county	11									1
Hancock, Delaware county	7									
Hannibal, Oswego county	29									5
Hanover, Chautauqua county	39		1				1		1	1
Hardenburgh, Ulster county	8									1
Harford, Cortland county	18				1				1	
Harmony, Chautauqua county	18									3
Harpersfield, Delaware county	17		1						1	
Harrietstown, Franklin county	20									7
Harrisburgh, Lewis county	4								1	
Harrison, Westchester county	26									1
Hartford, Washington county	23									2
Hartland, Niagara county	41								1	
Hartsville, Steuben county										
Hartwick, Otsego county	32		2							
Hastings, Oswego county	36	1	1	1		1			1	
Haverstraw, Rockland county										
Hebron, Washington county	23									1
Hector, Schuyler county	54		1							3
Hempstead, Queens county	200		4	2	1	1	1	7	19	10
Henderson, Jefferson county	16									1

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued.*)

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Henrietta, Monroe county	26	.....	....	....	....	....	....	....	....	5
Herkimer, Herkimer county	13	.....	2	....	....	....	....	....	...	.....
Hermon, St. Lawrence county	20	.....	...	....	....	....	....	1	1	2
Highlands, Orange county	39	.....	....	....	1	....	....	....	5	4
Highlands, Sullivan county	15	.....	....	....	....	....	....	3	....	1
High Market, Lewis county	8	.....	....	....	....	....	....	....	....	.....
Hillsdale, Columbia county	20	.....	....	....	....	....	....	...	...	.....
Hinsdale, Cattaraugus county	16	.....	....	....	....	1	....	....	....	.....
Holland, Erie county	30	.....	....	....	....	....	....	....	...	1
Homer, Cortland county	21	.....	....	....	....	....	....	....	....	.....
Hoosick, Rensselaer county	33	.....	1	....	2	....	...	....	....	1
Hoosick Falls, Rensselaer county	80	1	2	....	....	....	1	4	3	9
Hope, Hamilton county	.....	.....	....	....	....	....	...	....	...	.....
Hopewell, Ontario county	33	.....	....	....	....	1	....	....	....	2
Hopkinton, St. Lawrence county	15	.....	....	....	....	....	....	....	....	.....
Horicon, Warren county	8	.....	....	1	....	....	....	....	....	1
Hornby, Steuben county	8	.....	....	....	....	....	....	....	....	.....
HORNELLSVILLE, Steuben county	147	3	10	....	3	....	7	3	10	3
Hornellsville, Steuben county	12	.....	....	....	....	....	...	...	....	.....
Horseheads, Chemung county	21	.....	....	....	....	1	1	....	....	1
Hounsfield, Jefferson county	41	.....	....	....	....	....	....	....	....	2

Howard, Steuben county	3	.....	....	....	....	....	....	....	....	1
Hudson, Columbia county	189	.....	....	1	8	....	6	9	7	22
Hume, Allegany county	18	1	....	....	....	....	....	....	....	.....
Humphrey, Cattaraugus county	11	.....	....	....	....	....	....	....	....	.....
Hunter, Greene county	21	.....	....	....	....	....	....	....	....	1
Hurley, Ulster county	26	.....	....	....	....	....	....	....	....	5
Huron, Wayne county	25	.....	....	....	....	....	....	....	....	1
Hyde Park, Dutchess county	52	.....	2	....	....	....	....	3	....	3
Ilion, Herkimer county	48	.....	1	....	....	....	....	2	3	5
Independence, Allegany county	.....	.....	....	....	....	....	....	....	....	.....
Indian Lake, Hamilton county	11	.....	....	....	....	....	....	....	....	.....
Ira, Cayuga county	15	.....	....	....	....	....	....	....	....	2
Irondequoit, Monroe county	16	.....	....	....	....	....	....	....	2	2
Ischua, Cattaraugus county	2	.....	....	....	....	....	....	....	....	.....
Islip, Suffolk county	141	2	3	....	....	....	....	6	13	5
Italy, Yates county	3	.....	....	....	....	....	....	....	....	.....
Ithaca, Tompkins county	129	.....	5	1	1	....	5	5	4	17
Jackson, Washington county	19	.....	....	....	1	....	....	....	....	1
Jamaica, Queens county	84	.....	....	....	....	....	....	2	1	10
Jamestown, Chautauqua county	195	3	7	1	2	8	....	2	7	31
Jasper, Steuben county	14	.....	....	....	....	....	....	....	....	.....
Java, Wyoming county	12	.....	....	....	....	....	....	....	....	.....
Jay, Essex county	12	.....	....	....	....	....	....	....	....	2
Jefferson, Schoharie county	12	.....	1	....	....	....	....	....	....	.....
Jerusalem, Yates county	32	.....	....	....	1	....	....	....	1	.....
Jewett, Greene county	10	.....	....	....	....	....	....	....	....	.....
Johnsburgh, Warren county	15	1	....	....	....	....	....	....	....	2
Johnstown, Fulton county	35	.....	....	....	....	....	....	2	....	6
Johnstown, Fulton county	83	.....	....	1	2	....	....	3	4	12
Junius, Seneca county	13	.....	3	....	....	....	....	....	....	.....
Keene, Essex county	10	.....	....	....	....	....	....	....	....	1

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC. (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Kendall, Orleans county	18	.....	....	....	....	....	....	....	1	.....
Kent, Putnam county	24	.....	...	....	....	....	....	....	....	.....
Kiantone, Chautauqua county	12	.....	....	....	....	...	....	....	....	.....
Kinderhook, Columbia county	79	.....	....	....	....	....	....	....	5	6
Kingsbury, Washington county	84	....	2	....	1	....	....	4	3	3
Kingston, Ulster county	382	9	1	13	1	....	7	36	27	56
Kingston, Ulster county	7	.....	....	....	....	....	....	1	....	1
Kirkland, Oneida county	58	.....	....	....	....	....	....	5	....	8
Kirkwood, Broome county	27	.....	....	....	....	....	...	5	....	....
Knox, Albany county	13	.....	....	....	....	....	....	1	....	1
Kortwright, Delaware county	14	.....	....	....	....	....	....	....	....	.....
La Fayette, Onondaga county	32	.....	....	....	....	....	....	....	3	.....
La Grange, Dutchess county	19	.....	...	....	....	....	....	...	....	.....
Lake Pleasant, Hamilton county	1	.....	....	....	....	....	....	....	....	.....
Lancaster, Erie county	44	.....	....	....	1	....	...	1	1	4
Lansing, Tompkins county	11	.....	....	....	....	....	....	....	....	2
Lansingburgh, Rensselaer county	176	.....	5	1	....	....	1	3	15	14
Lapoor, Cortland county	11	.....	....	....	...	....	1	....	....	1
Laurens, Otsego county	27	.....	....	....	....	....	....	....	1	1
Lawrence, St. Lawrence county	18	.....	....	....	....	....	....	....	....	8
Lebanon, Madison county	13	.....	....	....	....	....	....	....	....	.....

Ledyard, Cayuga county	14	.....	...	....	....	....	....	....	....	....	....	.....
Lee, Oneida county	18	.....	....	....	....	....	....	....	....	....	....	.....
Leicester, Livingston county	7	.....	....	....	....	....	....	....	....	....	....	1
Lenox, Madison county	32	1	....	....	....	....	....	....	....	3	....	.....
Leon, Cattaraugus county	3	.....	....	....	....	....	....	....	....	....	....	1
Le Ray, Jefferson county	28	.....	....	....	....	....	....	....	....	....	....	6
Le Roy, Genesee county	47	.....	....	....	....	....	....	....	....	1	....	4
Lewis, Essex county	17	.....	....	....	....	....	1	....	....	....	....	.....
Lewis, Lewis county	15	.....	....	....	....	....	1	....	....	....	....	.....
Lewisboro, Westchester county	14	.....	....	....	....	....	....	....	....	....	....	.....
Lewiston, Niagara county	34	.....	....	....	1	....	....	....	....	1	....	3
Lexington, Greene county	4	.....	....	....	....	....	....	....	....	....	....	.....
Leyden, Lewis county	18	.....	....	....	....	....	....	....	....	1	....	.....
Liberty, Sullivan county	35	.....	....	....	....	....	....	....	....	....	....	2
Lima, Livingston county	35	.....	1	....	....	....	....	....	....	....	....	1
Linklaen, Chenango county	11	.....	....	....	....	....	1	....	....	....	....	1
Lindley, Steuben county	1	.....	....	....	....	....	....	....	....	....	....	.....
Lisbon, St. Lawrence county	30	.....	....	....	....	....	....	....	....	....	....	4
Lisle, Broome county	25	.....	1	....	....	....	....	....	....	....	....	.....
Litchfield, Herkimer county	11	.....	....	....	....	....	....	....	....	....	....	1
Little Falls, Herkimer county	153	1	6	....	....	4	....	12	16	....	16	16
Little Valley, Cattaraugus county	17	.....	1	....	....	....	....	....	2	....	....	.....
Livingston, Columbia county	16	.....	....	....	....	....	....	....	....	1	....	.....
Livonia, Livingston county	12	.....	....	....	....	....	....	....	....	1	....	.....
Lloyd, Ulster county	42	.....	....	....	....	....	1	....	....	....	....	3
Locke, Cayuga county	22	.....	....	....	....	....	....	....	....	....	....	1
Lockport, Niagara county	125	.....	1	2	....	1	....	....	....	8	....	9
Lockport, Niagara county	19	.....	3	....	....	....	....	....	....	....	....	.....
Lodi, Seneca county	27	.....	1	....	....	....	....	....	....	2	....	2
Long Island City, Queens county	588	2	6	12	4	3	7	35	85	40		
Long Lake, Hamilton county	8	.....	....	....	....	....	....	....	....	....	....	.....

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Lorraine, Jefferson county	16	.....	....	....	....	....	....	....	....	2
Louisville, St. Lawrence county	6	.....	....	....	....	....	....	....	....	1
Lowville, Lewis county	60	.....	....	....	....	....	....	1	1	5
Lumberland, Sullivan county	8	.....	....	....	....	....	....	....	....	....
Luzerne, Warren county	16	1	1	....	....	....	....	....	....	....
Lyme, Jefferson county	26	.....	....	....	....	....	....	....	....	2
Lyndon, Cattaraugus county	4	.....	....	....	....	....	....	....	....	....
Lyons, Wayne county	106	.....	5	2	....	....	....	3	5	9
Lyonsdale, Lewis county	4	.....	....	....	....	....	....	....	....	....
Lysander, Onondaga county	32	.....	2	....	....	....	....	....	1	3
Macdonough, Chenango county	10	.....	....	....	....	....	....	....	....	....
Macedon, Wayne county	24	.....	....	....	....	....	....	....	....	3
Machias, Cattaraugus county	29	1	....	....	....	....	....	....	....	....
Macomb, St. Lawrence county	5	.....	....	....	....	....	....	....	....	1
Madison, Madison county	45	.....	....	....	....	....	....	4	2	1
Madrid, St. Lawrence county	25	.....	....	....	....	....	....	....	1	1
Maine, Broome county	16	.....	....	....	....	....	....	1	....	....
Malone, Franklin county	127	.....	....	....	....	....	1	14	9	15
Malta, Saratoga county	22	.....	....	....	....	....	....	....	....	....
Mamakating, Sullivan county	66	1	....	....	....	....	1	....	2	5
Mamaroneck, Westchester county	43	1	....	....	....	....	....	....	3	4

Manchester, Ontario county	85	1	3		2	1	3		9
Manheim, Herkimer county	43					7	1		2
Manlius, Onondaga county	96					7	1		2
Mansfield, Cattaraugus county	7								1
Marathon, Cortland county	19								1
Marbletown, Ulster county	51		3		2		4		7
Marcellus, Onondaga county	10								2
Marcy, Oneida county	13								1
Marilla, Erie county	20	1			1		1		2
Marion, Wayne county	33						1		1
Marlborough, Ulster county	35					2			2
Marshall, Oneida county	20						1		
Martinsburgh, Lewis county	19		1						3
Maryland, Otsego county	23			1					2
Masonville, Delaware county	13					1	1		
Massena, St. Lawrence county	24						1		3
Mayfield, Fulton county	31					2			1
Medina, Orleans county	73	1		3	2	4	5		7
Meadon, Monroe county	43						1		2
Mentz, Cayuga county	27								2
Meredith, Delaware county	11								1
Mexico, Oswego county	71		1						4
Middleburgh, Schoharie county	32								1
Middlebury, Wyoming county	32						1		1
Middlefield, Otsego county	40	1				1			1
Middlesex, Yates county	24	1			1	1			3
Middletown, Orange county	214		2	4	3	1	13		22
Middletown, Delaware county	50	1				3			3
Milan, Dutchess county	14								1
Milford, Otsego county	20								
Milo, Yates county	18								

Returns of Local Health Boards of Health, etc. (*Continued*).

Name of Place.	Population.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Milton, Sandusky county	852					1			11
Milton, Trumbull county	11								
Minerva, Stark county	646			2	2		2		3
Minerva Park, Franklin county	7								
Minford, Scioto county	20								
Minerva, Mahoning county	49								
Minerva, Montgomery county	42								
Minerva Park, Franklin county	30								
Minerva, Champaign county	10								
Minerva, Lake county	11								
Minerva, Lorain county	93								
Minerva, Muskingum county	27								
Minerva, Scioto county	24								
Minerva, Hamilton county	46								
Minerva, Cuyahoga county	43								
Minerva, Guernsey county	2								
Minerva, Hamilton county	67								
Minerva, Lorain county	32								
Minerva, Fayette county	31								
Minerva, St. Lawrence county	38								
Minerva, Hocking county	41								
Minerva Mills, Livingston county									

Mount Pleasant, Westchester county	100	.....	1	1	....	....	....	....	1	6
Mount Vernon, Westchester county	169	.....	4	1	3	....	1	4	17	15
Murray, Orleans county	38	1	....	....	....	1	....	....	1	2
Nanticoke, Broome county	8	.....	....	....	....	....	....	....	....	.....
Naples, Ontario county	26	1	....	....	....	....	....	....	4	2
Napoli, Cattaraugus county	3	.....	....	....	....	....	....	....	....	.....
Nassau, Rensselaer county	31	.....	1	....	....	....	....	....	....	4
Nelson, Madison county	23	.....	1	....	....	....	....	....	....	2
Neversink, Sullivan county	21	.....	....	....	....	1	....	....	....	.....
New Albion, Cattaraugus county	24	.....	1	....	....	1	....	....	1	.....
Newark, Wayne county	47	.....	3	....	....	1	....	....	2	6
Newark Valley, Tioga county	38	.....	1	....	....	....	....	3	....	7
New Baltimore, Greene county	30	.....	....	....	....	....	....	....	....	1
New Berlin, Chenango county	11	.....	1	....	....	....	....	....	....	.....
New Bremen, Lewis county	24	.....	....	....	....	....	....	....	....	2
New Brighton, Richmond county	344	.....	2	....	2	....	1	18	24	39
Newburgh, Orange county	391	3	3	2	2	...	6	21	36	72
Newburgh, Orange county	9	.....	....	....	....	....	....	....	....	.....
Newcastle, Westchester county	40	.....	....	....	....	....	....	....	....	.....
Newcomb, Essex county	3	.....	....	....	....	....	....	....	....	.....
Newfane, Niagara county	37	.....	1	1	....	....	....	2	1	3
Newfield, Tompkins county	10	.....	....	....	....	....	....	....	....	1
New Hartford, Oswego county	54	.....	....	....	....	....	....	4	2	4
New Haven, Oswego county	29	.....	....	....	....	....	....	1	....	1
New Hudson, Allegany county	8	.....	....	....	....	....	....	....	....	....
New Lebanon, Columbia county	17	.....	....	....	....	....	....	....	....	1
New Lisbon, Otsego county	13	.....	....	....	....	....	....	....	....	.....
New Paltz, Ulster county	29	.....	....	....	....	1	....	2	....	3
Newport, Herkimer county	37	.....	....	....	....	....	....	....	....	1
New Rochelle, Westchester county	18	1	....	....	....	....	....	....	1	.....
New Rochelle, Westchester county	140	1	....	....	....	....	1	4	10	13

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
New Scotland, Albany county	41	.....	....	....	....	....	....	....	....	7
Newstead, Erie county	44	.....	1	....	....	....	3	....	....	5
Newtown, Queens county	406	1	2	11	1	1	1	40	37	30
New Utrecht, Kings county	174	.....	....	....	....	2	1	10	27	14
New Windsor, Orange county	16	.....	....	...	....	....	...	1	....	3
NEW YORK, New York county	40,103	136	351	186	398	730	527	1,771	3,346	5,491
Niagara, Niagara county	108	.....	3	....	....	8	....	3	6	13
Nichols, Tioga county	31	.....	....	....	....	....	1	....	1	.....
Niles, Cayuga county	12	.....	....	....	....	....	....	...	....	.....
Niskayuna, Schenectady county	13	1	....	....	....	....	....	....	....	.....
Norfolk, St. Lawrence county	21	.....	....	....	....	....	....	....	....	.....
Northampton, Fulton county	23	.....	....	....	....	....	....	3	....	.....
North Castle, Westchester county	23	.....	1	....	....	....	....	....	....	.....
North Collins, Westchester county	22	.....	....	....	....	....	....	4	....	1
North Dansville, Livingston county	4	.....	....	....	....	....	....	....	....	.....
North East, Dutchess county	38	.....	....	....	....	...	....	....	....	2
North Elba, Essex county	15	.....	....	....	....	....	....	....	....	1
Northfield, Richmond county	89	.....	....	....	...	....	2	6	3	6
North Greenbush, Rensselaer county	72	1	1	....	....	...	....	4	1	5
North Hempstead, Queens county	156	.....	....	2	1	1	1	1	16	8
North Hudson, Essex county	13	.....	....	....	....	....	....	....	....	.....

North Norwich, Chenango county	8	.....	....	....	....	...	.....	....	....	.....
North Salem, Westchester county	33	.....	1	....	....	....	....	....	....	1
Northumberland, Saratoga county	27	.....	....	....	....	....	....	....	....	1
Norway, Herkimer county	11	.....	....	....	....	....	....	....	....	1
Norwich, Chenango county	80	1	1	1	....	....	3	1	5	9
Norwich, Chenango county	19	.....	....	....	....	....	....	....	....	1
Nunda, Livingston county	49	.....	1	....	1	....	....	....	2	4
Nyack, Rockland county	80	.....	....	....	....	....	....	....	7	12
Oakfield, Genesee county	20	.....	1	....	....	....	....	....	....	.....
Ogden, Monroe county	43	.....	....	....	....	....	....	....	....	5
Ogdensburgh, St. Lawrence county	225	3	2	1	4	..	11	8	20	24
Ohio, Herkimer county	11	.....	....	....	....	....	....	....	....	1
Olean, Cattaraugus county	5	.....	....	....	....	1	....	....	....	.....
Olean, Cattaraugus county	147	.....	3	1	2	2	2	4	33	12
Olive, Ulster county	27	.....	....	....	....	....	1	....	....	2
Oneida, Madison county	4	.....	....	....	....	....	....	....	1	4
Oneonta, Otsego county	28	.....	2	....	....	....	....	1	....	2
Onondaga, Onondaga county	118	1	2	....	....	....	....	....	1	7
Ontario, Wayne county	38	.....	....	....	....	....	....	....	....	1
Oppenheim, Fulton county	6	.....	....	....	....	....	....	3	....	.....
Orange, Schuyler county	11	.....	....	....	....	....	....	....	....	.....
Orangetown, Rockland county	67	.....	....	....	....	....	....	....	2	4
Orangeville, Wyoming county	16	.....	....	....	....	....	....	....	1	.....
Orleans, Jefferson county	25	.....	1	....	....	....	....	....	....	.....
Orwell, Oswego county	3	.....	....	....	....	....	....	....	....	.....
Osceola, Lewis county	4	.....	....	....	....	....	....	....	....	.....
Osiian, Livingston county	5	.....	....	....	....	....	....	....	....	.....
Ossining, Westchester county	51	.....	....	....	....	....	....	....	2	9
Oswegatchie, St. Lawrence county	26	.....	....	....	....	....	....	....	....	1
Oswego, Oswego county	348	.....	12	2	1	....	....	3	19	42
Oswego, Oswego county	49	.....	1	....	7	....	....	....	....	2

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Pleasant Valley, Dutchess county	28	.....	....	....	....	....	....	....	....	3
Plymouth, Chenango county	2	.....	1	....	....	....	....	....	....	.....
Poestenkill, Rensselaer county	33	.....	....	....	....	....	....	3	....	2
Poland, Chautauqua county	15	.....	...	...	1	....	....	....	....	.....
Pomfret, Chautauqua county	25	.....	....	....	....	....	....	...	....	1
Pompey, Onondaga county	45	.....	....	....	....	....	....	....	1	6
Portage, Livingston county	11	.....	....	....	....	....	...	....	....	1
Portchester, Westchester county	85	.....	....	1	1	....	1	....	20	6
Porter, Niagara county	24	.....	....	....	....	....	....	....	....	.....
Port Jervis, Orange county	158	1	7	2	1	....	....	5	....	23
Portland, Chautauqua county	17	.....	....	....	....	....	....	....	1	1
Port Richmond, Richmond county	76	.....	....	1	1	....	1	11	5	9
Portville, Cattaraugus county	20	.....	....	....	....	....	....	....	....	1
Potsdam, St. Lawrence county	75	.....	....	....	....	....	....	....	3	13
Potsdam, St. Lawrence county	70	1	1	....	....	....	....	....	4	7
Potter, Yates county	25	.....	....	....	....	....	....	....	....	1
POUGHKEEPSIE, Dutchess county	430	1	5	9	1	....	1	4	18	52
Poughkeepsie, Dutchess county	87	.....	....	....	....	....	....	....	1	4
Poundridge, Westchester county	7	.....	....	....	....	....	....	....	....	....
Prattsburgh, Steuben county	18	.....	....	....	....	....	....	....	....	.....
Prattsville, Greene county	13	.....	....	....	....	....	....	....	....	2

Pawling, Dutchess county	38	.....	....	....	....	....	....	....	.....	.....
Peekskill, Westchester county	146	.....	1	1	....	....	....	8	9	13
Pelham, Westchester county	126	.....	....	....	....	....	....	1	5	46
Pembroke, Genesee county	46	.....	1	....	....	....	....	....	3	.....
Pendleton, Niagara county	14	.....	....	....	....	....	....	....	....	1
Penfield, Monroe county	36	.....	....	1	....	....	....	....	1	2
Penn Yan, Yates county	73	.....	1	....	....	....	1	....	2	7
Perrinton, Monroe county	70	.....	....	1	....	....	....	4	1	6
Perry, Wyoming county	51	.....	1	....	....	....	....	....	....	3
Perrysburgh, Cattaraugus county	20	.....	....	....	....	....	....	....	....	2
Persia, Cattaraugus county	24	.....	....	....	....	....	....	....	....	.....
Perth, Fulton county	6	.....	....	....	....	....	....	....	....	.....
Peru, Clinton county	34	.....	....	1	....	2	....	....	3	3
Petersburgh, Rensselaer county	17	.....	....	....	....	....	....	....	....	1
Pharsalia, Chenango county	...	.....	....	....	....	....	....	....	....	.....
Phelps, Ontario county	99	.....	1	....	....	4	1	1	4	11
Philadelphia, Jefferson county	30	.....	....	....	....	....	....	2	1	5
Phillipstown, Putnam county	55	.....	....	....	....	....	....	2	2	3
Pierrepont, St. Lawrence county	21	.....	....	....	....	....	....	....	....	.....
Pike, Wyoming county	18	.....	1	....	....	....	....	....	....	1
Pine Plains, Dutchess county	20	.....	....	....	....	....	....	....	....	2
Pinckney, Lewis county	6	.....	....	....	....	....	....	....	....	2
Pitcairn, St. Lawrence county	11	.....	....	....	....	....	....	1	....	.....
Pitcher, Chenango county	10	.....	....	....	....	....	....	....	....	.....
Pittsfield, Otsego county	2	.....	....	....	....	....	....	....	....	.....
Pittsford, Monroe county	38	.....	1	....	....	....	....	1	1	1
Pittstown, Rensselaer county	66	.....	....	....	2	....	....	....	2	6
Plainfield, Otsego county	13	.....	....	....	....	....	....	....	....	1
Plattekill, Ulster county	31	.....	....	....	....	....	....	....	....	1
Plattsburgh, Clinton county	21	.....	....	....	....	....	....	1	3	2
Plattsburyh, Clinton county	90	.....	2	....	....	1	....	2	4	13
		3								

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Pleasant Valley, Dutchess county	28	.....	....	....	....	....	....	....	....	3
Plymouth, Chenango county	2	.....	1	....	....	....	....	....	....	.....
Poestenkill, Rensselaer county	33	.....	....	....	....	....	....	3	....	2
Poland, Chautauqua county	15	.....	...	...	1	....	....	....	....	.....
Pomfret, Chautauqua county	25	.....	....	....	....	....	....	...	...	1
Pompey, Onondaga county	45	.....	....	....	....	....	....	....	1	6
Portage, Livingston county	11	.....	....	....	....	....	...	....	....	1
Portchester, Westchester county	85	.....	....	1	1	....	1	....	20	6
Porter, Niagara county	24	.....	....	....	....	....	....	....	....	.....
Port Jervis, Orange county	158	1	7	2	1	....	....	5	....	23
Portland, Chautauqua county	17	.....	....	....	....	....	....	....	1	1
Port Richmond, Richmond county	76	.....	....	1	1	....	1	11	5	9
Portville, Cattaraugus county	20	.....	....	....	....	....	....	....	....	1
Potsdam, St. Lawrence county	75	.....	....	....	....	....	....	....	3	13
Potsdam, St. Lawrence county	70	1	1	....	....	....	....	....	4	7
Potter, Yates county	25	.....	....	....	....	....	....	....	....	1
POUGHKEEPSIE, Dutchess county	430	1	5	9	1	....	1	4	18	52
Poughkeepsie, Dutchess county	87	.....	...	...	....	....	....	....	1	4
Poundridge, Westchester county	7	.....	....	....	....	....	....	....	....	.....
Prattsburgh, Steuben county	18	.....	....	....	....	...	....	....	....	.....
Prattsville, Greene county	13	.....	....	....	....	....	....	....	....	2

Preble, Cortland county	20	.....	....	....	....	....	....	....	....	2	.....	
Preston, Chautauqua county	9	.....	....	....	....	....	....	....	....	....	.....	
Princetown, Schenectady county	11	.....	1	....	....	....	....	....	....	....	1	
Providence, Saratoga county	10	.....	....	....	....	....	....	....	....	....	1	
Pulteney, Steuben county	9	.....	....	....	....	....	....	....	....	....	.....	
Putnam, Washington county	1	.....	....	....	....	....	....	....	....	....	.....	
Queensbury, Warren county	43	.....	1	....	....	....	....	1	....	1	1	
Ramapo, Rockland county	57	1	1	1	....	....	1	....	....	3	8	
Randolph, Cattaraugus county	21	.....	2	....	....	....	....	....	....	1	2	
Rathbone, Steuben county	2	.....	....	....	....	....	....	....	....	....	.....	
Reading, Schuyler county	15	.....	1	....	....	....	....	....	....	....	.....	
Redfield, Oswego county	10	.....	....	....	....	....	....	....	....	....	1	
Redhook, Dutchess county	59	.....	....	....	....	....	....	2	....	2	2	
Red House, Cattaraugus county	1	.....	....	....	....	....	....	....	....	....	.....	
Remsen, Oneida county	17	.....	....	....	....	....	....	....	....	....	2	
Rensselaerville, Albany county	29	.....	....	....	....	....	....	....	....	....	.....	
Rhinebeck, Dutchess county	51	.....	....	....	....	....	....	1	....	....	7	
Richfield, Otsego county	31	.....	....	....	....	....	....	....	....	....	.....	
Richford, Tioga county	21	.....	....	....	....	....	....	....	....	1	1	
Richland, Oswego county	47	.....	1	....	....	....	....	....	....	3	5	
Richmond, Ontario county	8	.....	....	....	....	....	....	....	....	....	1	
Richmondville, Schoharie county	35	.....	....	....	....	....	1	....	....	1	1	
Ridgeway, Orleans county	34	.....	1	....	....	....	....	....	....	....	2	
Riga, Monroe county	25	.....	....	....	....	....	....	....	....	....	2	
Ripley, Chautauqua county	24	.....	....	....	....	....	....	1	....	1	1	
Riverhead, Suffolk county	56	.....	1	....	....	....	....	....	....	2	2	
ROCHESTER, Monroe county	2,259	4	43	13	10	11	7	64	188	277		
Rochester, Ulster county	35	.....	....	....	....	....	1	1	1	5		
Rockland, Sullivan county	30	.....	....	....	....	....	....	....	....	....	.....	
Rodman, Jefferson county	20	.....	....	....	....	....	....	....	....	....	.....	
ROME, Oneida county	293	4	4	1	1	4	2	70	17	25		

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Romulus, Seneca county	50	.....	....	....	....	....	....	....	....	8
Root, Montgomery county	10	.....	1	....	....	....	....	....	....	.....
Rose, Wayne county	24	.....	....	....	....	....	....	....	....	2
Roseboom, Otsego county	17	.....	....	....	....	....	....	....	....	1
Rosendale, Ulster county	115	1	2	1	....	....	2	2	7	12
Rossie, St. Lawrence county	4	.....	....	....	....	....	....	....	....	2
Rotterdam, Schenectady county	32	.....	1	....	1	....	....	1	....	1
Roxbury, Delaware county	20	.....	2	....	....	....	....	....	....	1
Royalton, Niagara county	58	.....	....	....	....	....	....	....	....	2
Rush, Monroe county	17	.....	....	....	....	....	....	....	....	2
Rushford, Allegany county	4	.....	....	....	....	....	....	....	....	.....
Russell, St. Lawrence county	9	.....	1	....	....	....	....	....	....	1
Russia, Herkimer county	1	.....	....	....	....	....	....	....	....	.....
Rutland, Jefferson county	26	.....	....	....	....	....	....	....	....	1
Rye, Westchester county	81	2	....	....	2	....	....	....	2	9
Sag Harbor, Suffolk county	55	.....	1	....	....	1	....	2	2	8
St. Armand, Essex county	7	.....	....	....	....	....	....	....	....	1
St. Johnsville, Montgomery county	45	.....	....	....	....	....	....	1	....	1
Salamanca, Cattaraugus county	5	.....	....	....	....	....	....	....	....	1
Salamanca, Cattaraugus county	51	.....	2	2	....	1	....	1	1	2
Salem, Washington county	39	.....	....	....	....	....	....	....	2	6

Salina, Onondaga county	46	.....	.....	.....	.....	.....	1	2	6	3
Salisbury, Herkimer county	17	.....	.....	.....	.....	1	.....	2	.....	1
Sand Lake, Rensselaer county	38	.....	1	.....	.....	.....	1	.....	.....	3
Sandy Creek, Oswego county	42	.....	.....	2	.....	.....	.....	.....	.....	3
Sanford, Broome county	26	.....	.....	1	.....	.....	.....	1	.....	.....
Sangerfield, Oneida county	40	.....	.....	1	.....	.....	.....	2	1	2
Saranac, Clinton county	39	.....	.....	.....	.....	.....	.....	.....	.....	5
Saratoga, Saratoga county	78	.....	.....	1	.....	.....	.....	.....	.....	6
Saratoga Springs, Saratoga county	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saratoga Springs, Saratoga county	277	.....	1	4	2	.....	2	4	17	34
Sardinia, Erie county	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saugerties, Ulster county	136	.....	.....	2	1	.....	.....	4	1	8
Saugerties, Ulster county	73	.....	.....	.....	1	.....	.....	.....	3	17
Savannah, Wayne county	21	.....	.....	.....	.....	.....	1	.....	.....	.....
Scarsdale, Westchester county	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schaghticoke, Rensselaer county	38	.....	.....	.....	.....	.....	.....	.....	.....	3
SCHENECTADY, Schenectady county	515	.....	3	65	17	.....	4	19	42	49
Schodack, Rensselaer county	55	.....	.....	2	1	.....	.....	.....	.....	2
Schoharie, Schoharie county	40	.....	.....	.....	1	.....	.....	1	2	4
Schroeppel, Oswego county	51	.....	.....	2	.....	.....	1	.....	1	3
Schroon, Essex county	18	.....	.....	.....	.....	.....	.....	.....	.....	2
Schuyler, Herkimer county	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schuyler Falls, Clinton county	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scio, Allegany county	2	.....	.....	.....	.....	.....	.....	.....	1	1
Scipio, Cayuga county	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scott, Cortland county	15	.....	.....	.....	.....	.....	.....	.....	.....	1
Scriba, Oswego county	26	.....	.....	.....	1	.....	.....	.....	1	2
Sempronius, Cayuga county	7	.....	.....	.....	.....	.....	.....	.....	.....	1
Seneca, Ontario county	32	.....	.....	.....	.....	1	.....	.....	2	.....
Seneca Falls, Seneca county	5	.....	.....	1	.....	.....	.....	.....	.....	1
Sennett, Cayuga county	21	.....	1	1	.....	.....	.....	.....	.....	.....

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Seward, Schoharie county	23	.....	....	....	....	...	...	....	2	2
Shandaken, Ulster county	50	.....	1	....	....	....	....	4	2	4
Sharon, Schoharie county	31	.....	1	....	....	....	....	....	1	2
Shawangunk, Ulster county	14	.....	....	....	....	....	....	....	....	.....
Shelby, Orleans county	30	.....	....	....	....	....	...	1	....	3
Sheldon, Wyoming county	22	.....	....	....	....	....	....	....	....	.....
Shelter Island, Suffolk county	15	.....	...	....	....	....	1	....	1	.....
Sherburne, Chenango county	32	.....	2	....	....	....	....	....	....	.....
Sheridan, Chautauqua county	15	.....	....	....	....	....	....	....	....	1
Sherman, Chautauqua county	26	.....	1	....	....	....	....	....	....	.....
Sidney, Delaware county	64	.....	4	....	....	....	....	8	....	5
Sing Sing, Westchester county	135	.....	4	2	....	....	....	....	4	20
Skaneateles, Onondaga county	35	.....	....	....	....	....	....	....	...	5
Smithfield, Madison county	9	.....	....	....	....	....	....	....	....	.....
Smithtown, Suffolk county	98	.....	9	....	....	....	....	1	....	12
Smithville, Chenango county	19	.....	....	....	....	....	....	....	....	1
Smyrna, Chenango county	25	.....	....	....	....	....	...	....	...	1
Sodus, Wayne county	54	.....	1	...	....	....	....	....	1	5
Solon, Cortland county	13	.....	....	....	....	....	....	....	....	....
Somers, Westchester county	25	.....	....	....	....	....	....	....	....	.....
Somerset, Niagara county	14	.....	....	....	....	....	....	....	....	.....

Southampton, Suffolk county	109				1		1	5		5
South Bristol, Ontario county	8									
South East, Putnam county	80		2	1		1	1	8		5
Southfield, Richmond county	33							5		1
Southold, Suffolk county	131		5	17	1		3	13		10
Southport, Chemung county	37	1				1	7	2		2
South Valley, Cattaraugus county										
Spafford, Onondaga county	7									
Sparta, Livingston county	3									
Spencer, Tioga county	7		1				1			
Springfield, Otsego county	27	1						1		1
Springport, Cayuga county	41				1					2
Springwater, Livingston county	10							2		1
Stafford, Genesee county	20		1							
Stamford, Delaware county	35									1
Stanford, Dutchess county	30							1		1
Stark, Herkimer county	22									1
Starkey, Yates county	20									2
Stephentown, Rensselaer county	23									2
Sterling, Cayuga county	35							1		2
Steuben, Oneida county	3									1
Stillwater, Saratoga county	41							1		5
Stockbridge, Madison county	21									1
Stockholm, St. Lawrence county	35	1					2			3
Stockport, Columbia county	37				1					4
Stockton, Chautauqua county	23		1	1			1			1
Stony Creek, Warren county	9									
Stony Point, Rockland county	42						1			4
Stratford, Fulton county	3									
Stuyvesant, Columbia county	36		1					2		2
Sullivan, Madison county	39					1				2

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.— (*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping-cough.	Diphtheria.	Diarrhœa.	Consumption.
Summer Hill, Cayuga county	12	.....	1	....	....	....	....	....	....	.....
Summit, Schoharie county	27	.....	1	....	....	....	....	....	2	1
Sweden, Monroe county	25	....	...	....	....	....	....	....	....	1
SYRACUSE, Onondaga county	1,620	9	29	10	11	24	15	50	160	181
Taghkanick, Columbia county	11	.....	....	..	....	....	....	....	....	5
Taylor, Cortland county	4	.....	...	....	..	....	....	....	....	1
Theresa, Jefferson county	29	.....	....	....	....	....	....	....	....	3
Thompson, Sullivan county	46	.....	....	....	....	....	....	2	1	2
Throop, Cayuga county	13	.....	....	...	...	1	....	....	....	.....
Thurman, Warren county	3	.....	....	....	....	....	....	....	....	.....
Thurston, Steuben county	2	.....	....	....	....	....	....	....	....	.....
Ticonderoga, Essex county	18	.....	1	....	....	1	....	....	1	1
Tioga, Tioga county	23	.....	....	...	....	....	....	....	....	.....
Tompkins, Delaware county	20	.....	....	....	...	....	....	...	....	1
Tonawanda, Erie county	142	6	14	2	4	....	....	1	13	14
Torrey, Yates county	3	.....	...	...	....	....	...	...	....	.....
Trenton, Oneida county	26	.....	1	....	....	...	....	....	....	1
Triangle, Broome county	22	.....	....	....	....	....	....	....	....	2
Troupsburgh, Steuben county	31	1	....	....	....	....	....	....	....	2
TROY, Rensselaer county	1,358	9	25	4	3	3	22	34	127	177
Truxton, Cortland county	19	.....	....	....	....	....	....	....	....	.....

Tully, Onondaga county	23	.....	....	....	....	....	....	....	1		2
Turin, Lewis county	21	.....	....	....	....	....	....	....	1		1
Tuscarora, Steuben county	2	.....	....	....	....	....	....	....	....		.....
Tusten, Sullivan county	.....	.....	....	....	....	....	....	....	....		.....
Tuxedo, Orange county	10	.....	....	1	...	....	....	....	....		.....
Tyre, Seneca county	14	.....	....	....	....	....	....	....	1		.....
Tyrone, Schuyler county	1	.....	....	....	...	....	....	....	....		.....
Ulster, Ulster county	31	.....	1	....	....	....	....	....	....		4
Ulysses, Tompkins county	41	1	....	....	...	....	1	....	1		2
Unadilla, Otsego county	40	.....	....	....	....	....	....	....	....		2
Union, Broome county	36	.....	....	....	2	....	....	....	....		1
Union Vale, Dutchess county	21	.....	....	....	....	....	1	....	....		.....
Urbana, Steuben county	33	.....	....	....	....	1	....	....	1		1
Utica, Oneida county	942	7	11	3	0	....	1	44	69		132
Van Buren, Onondaga county	23	.....	....	....	....	....	....	....	....		1
Van Etten, Chemung county	21	.....	...	....	....	....	....	....	1		2
Varick, Seneca county	17	.....	....	....	....	....	....	....	2		1
Venice, Cayuga county	15	.....	....	....	....	....	....	....	....		1
Vernon, Oneida county	31	.....	....	....	....	....	1	....	....		.....
Verona, Oneida county	33	.....	1	....	....	....	1	....	....		2
Vestal, Broome county	23	.....	....	....	....	....	....	....	....		1
Veteran, Chemung county	10	.....	....	....	....	....	....	....	....		.....
Victor, Ontario county	31	.....	....	....	....	....	....	....	....		4
Victory, Cayuga county	19	.....	....	1	....	1	....	....	....		1
Vienna, Oneida county	17	.....	1	....	1	....	1	....	....		.....
Villenova, Chautauqua county	11	.....	...	....	....	....	....	....	....		2
Virgil, Cortland county	24	.....	1	....	....	....	....	....	....		2
Volney, Oswego county	36	.....	....	....	....	....	....	....	....		3
Waddington, St. Lawrence county	21	.....	....	....	....	....	....	....	....		2
Wales, Erie county	7	.....	....	....	....	....	....	....	1		.....
Wallkill, Orange county	55	.....	1	....	1	....	1	....	1		3

RECORD OF EACH REPORTING LOCAL BOARD OF HEALTH, ETC.—(*Continued*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Walton, Delaware county	46	.....	....	..	....	....	....	....	4	3
Walworth, Wayne county	46	.....	...	....	....	1	....	2	....	2
Wappinger, Dutchess county	15	.....	1	...	....	....	1	....	1	3
Wappinger's Falls, Dutchess county	63	.....	1	....	....	....	....	....	1	10
Warren, Herkimer county	16	.....	....	....	....	....	....	....	....	.....
Warrensburgh, Warren county	16	.....	....	....	....	....	....	....	....	1
Warsaw, Wyoming county	61	1	...	...	....	....	....	1	4	2
Warwick, Orange county	77	1	1	....	...	....	....	5	1	5
Washington, Dutchess county	1	.....	....	....	....	....	....	....	....	.....
Waterford, Saratoga county	107	1	3	....	....	....	....	3	5	14
Waterloo, Seneca county	22	1	....	....	....	....	....	....	....	1
Waterloo, Seneca county	61	.....	....	....	....	....	....	....	5	4
WATERTOWN, Jefferson county	234	.....	6	....	....	....	1	4	29	25
Watertown, Jefferson county	19	.....	....	....	....	....	....	....	....	1
Watervliet, Albany county	97	1	3	....	1	....	2	2	5	4
Watson, Lewis county	7	.....	....	....	....	....	....	....	....	1
Waverly, Franklin county	45	.....	....	....	....	....	....	....	1	3
Wawarsing, Ulster county	39	.....	....	....	....	....	...	....	....	2
Wawayanda, Orange county	27	.....	....	....	....	....	....	....	....	5
Wayland, Steuben county	2	.....	....	....	....	....	....	....	....	.....
Wayne, Steuben county	.....	.....	...	....	....	....	....	....	...	.....

Webster, Monroe county	46	.....	1	.....	.....	1	.....	.....	1	2
Wells, Hamilton county	15	.....	.....	.....	.....	.....	.....	1	.....	1
Wellsville, Allegany county	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Almond, Allegany county	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Bloomfield, Ontario county	27	.....	.....	.....	.....	.....	.....	.....	.....	2
Westchester, Westchester county	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westerlo, Albany county	38	.....	.....	.....	.....	.....	.....	2	.....	3
Western, Oneida county	23	.....	.....	.....	.....	.....	.....	3	2	.....
Westfield, Chautauqua county	21	.....	1	.....	.....	.....	.....	.....	.....	2
Westfield, Richmond county	118	2	1	2	.....	.....	3	1	11	23
Westford, Otsego county	11	.....	.....	.....	.....	.....	.....	.....	1	.....
West Monroe, Oswego county	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westmoreland, Oneida county	27	.....	.....	.....	.....	.....	.....	.....	.....	3
Westport, Essex county	19	.....	.....	.....	.....	.....	1	2	.....	.....
West Seneca, Erie county	29	.....	1	.....	.....	.....	.....	.....	.....	.....
West Sparta, Livingston county	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Troy, Albany county	294	2	11	3	.....	2	2	17	25	53
West Turin, Lewis county	27	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Union, Steuben county	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westville, Franklin county	19	.....	.....	.....	.....	.....	.....	.....	.....	1
Wethersfield, Wyoming county	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheatfield, Niagara county	162	2	11	2	.....	2	.....	3	12	6
Wheatland, Monroe county	36	.....	.....	.....	.....	.....	.....	.....	.....	2
Wheeler, Steuben county	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
White Creek, Washington county	18	.....	.....	.....	.....	1	.....	.....	.....	2
Whitehall, Washington county	31	.....	2	.....	.....	.....	.....	1	1	.....
White Plains, Westchester county	66	.....	.....	.....	1	.....	.....	.....	3	6
Whitestown, Oneida county	74	.....	.....	1	.....	3	.....	9	5	5
Willett, Cortland county	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Williamson, Wayne county	31	.....	.....	1	1	.....	.....	.....	.....	1
Williamstown, Oswego county	24	.....	1	.....	.....	.....	.....	.....	.....	2

Record of each Reporting Local Board of Health, Etc.—(*Concluded*).

NAME OF PLACE.	All deaths.	Cerebro-spinal fever.	Typhoid fever.	Malaria.	Scarlet fever.	Measles.	Whooping cough.	Diphtheria.	Diarrhœa.	Consumption.
Willing, Allegany county	1		1							
Willsborough, Essex county	19							4		2
Wilmington, Essex county	2									
Wilmurt, Herkimer county	1									
Wilna, Jefferson county	30									1
Wilson, Niagara county	22									1
Wilton, Saratoga county	24							1		1
Windham, Greene county	20									1
Windsor, Broome county	38								1	
Winfield, Herkimer county	17									2
Wirt, Allegany county	2									
Wolcott, Wayne county	35									
Woodbury, Queens county	21									1
Woodhull, Steuben county	13									1
Woodstock, Ulster county	15		1							
Worcester, Otsego county	38	1	1						1	6
Worth, Jefferson county	11									
Wright, Schoharie county	24									1
Yates, Orleans county	30			1		2				3

YONKERS, Westchester county	557	.....	4	3	4	7	....	8	84	92
York, Livingston county	7	.....	....	....	....	....	....	....	1	.....
Yorkshire, Cattaraugus county	23	1	....	....	....	....	....	....	1	.....
Yorktown, Westchester county	35	.....	....	....	....	....	....	1	....	3

Second Report on Hudson River.

UNION COLLEGE, SCHOOL OF CIVIL ENGINEERING,
SCHENECTADY, N. Y., *January* 10, 1891.

LEWIS BALCH, M. D., *Secretary State Board of Health, Albany, N. Y.:*

SIR.—I find it difficult to write a report of the progress of the inspection of the Hudson river and its tributaries which will not require a repetition of much in the next report to bring the subjects into their proper order and position. I therefore give a statement of the progress of the field work during the past year and some statement of the magnitude of the work which has been taken up, leaving a full statement of the results until the results of the next year's work can be put with them, thus putting into one report all the data necessary to give a clear understanding of the problem proposed for solution, viz., the propriety of the use of the river and its tributaries for sewerage and as sources of water supply.

The river watershed covers all or part of the following towns and counties:

Essex county.—Towns of Moriah, North Hudson, Keene, Newcomb, Minerva, Schroon, Crown Point.

Warren county.—Towns of Hague, Horicon, Chester, Johnsburgh, Thurman, Stony Creek, Warrensburgh, Bolton, Caldwell, Luzerne, Queensbury.

Washington county.—Hartford, Kingsbury, Fort Edward, Argyle, Hebron, Salem, Greenwich, Jackson, Easton, Cambridge, White Creek.

Saratoga county.—Day, Hadley, Edinburgh, Corinth, Moreau, Providence, Greenfield, Wilton, Northumberland, Galway, Milton, Saratoga Springs, Saratoga, Charlton, Ballston, Malta, Stillwater, Clifton Park, Half Moon, Waterford.

Hamilton county.—Long Lake, Indian Lake, Morehouse, Arietta, Lake Pleasant, Wells, Benson, Hope.

Herkimer county.— Wilmurt, Russia, Ohio, Newport, Norway, Salisbury, Schuyler, Herkimer, Fairfield, Manheim, Frankfort, Litchfield, Winfield, German Flats, Columbia, Warren, Little Falls, Danube, Stark.

Oneida county.— Ava, Boonville, Lee, Western, Steuben, Remsen, Rome, Floyd, Trenton, Westmoreland, Marcy, Deerfield, Vernon, Kirkland, New Hartford, Augusta, Marshall, Paris, Sangerfield, Whitestown, Utica.

Lewis county.— Lewis.

Madison county.— Madison.

Otsego county.— Cherry Valley.

Fulton county.— Stratford, Oppenheim, Ephratah, Caroga, Bleecker, Johnstown, Mayfield, Northampton, Broadalbin, Perth.

Montgomery county.— St. Johnsville, Minden, Palatine, Canajoharie, Root, Mohawk, Glen, Charlestown, Amsterdam, Florida.

Schoharie county.— Sharon, Carlisle, Esperance, Seward, Cobleskill, Schoharie, Wright, Richmondville, Middleburgh, Summit, Fulton, Broome, Jefferson, Blenheim, Gilboa, Conesville.

Schenectady county.— Duanesburgh, Glenville, Princetown, Rotterdam, Niskayuna.

Albany county.— Knox, Guilderland, Albany, Watervliet, Berne, New Scotland, Bethlehem, Rensselaerville, Westerlo, Coeymans.

Rensselaer county.— Schaghticoke, Pittstown, Hoosick, Lansingburgh, Brunswick, Grafton, Petersburgh, North Greenbush, Greenbush, East Greenbush, Poestenkill, Sandlake, Berlin, Schodack, Nassau, Stephentown.

Columbia county.— Stuyvesant, Chatham, Kinderhook, New Lebanon, Canaan, Stockport, Ghent, Austerlitz, Greenport, Claverack, Hillsdale, Livingston, Taghkanick, Copake, Germantown, Clermont, Gallatin, Ancram.

Dutchess county.— Red Hook, Milan, Pine Plains, Northeast, Stanford, Clinton, Rhinebeck, Hyde Park, Pleasant Valley, Washington, Unionvale, LaGrange, Poughkeepsie, Wappinger, Fishkill, East Fishkill, Beekman, Pawling.

Greene county.— New Baltimore, Coxsackie, Athens, Catskill, Greenville, Cairo, Hunter, Durham, Windham, Jewett, Ashland, Prattsville, Lexington.

Ulster county.— Saugerties, Kingston, Ulster, Esopus, Lloyd, Marlborough, Plattekill, New Paltz, Rosendale, Woodstock, Hur-

TABLE I.—POPULATION OF COUNTIES, 1790 TO 1880—(*Continued*).

	Lewis (corner).	Madison (corner).	Montgomery.	Oneida (part).	Orange (most).	Otsego (corner).	Rensselaer.	Saratoga.	Schenectady.
1790	.....	.....	28,848	.....	18,492	.....	.....	.....	.....
1800	.....	.....	22,051	22,258	29,355	21,343	30,351	24,564	.....
1810	6,433	25,144	41,214	33,792	34,347	38,802	36,309	33,147	10,201
1820	9,227	32,208	37,561	50,997	41,213	44,856	40,114	36,052	12,876
1830	15,239	39,038	43,715	71,326	45,366	51,372	49,424	38,679	12,347
1840	17,830	40,008	35,818	85,310	50,739	49,628	60,259	40,553	17,387
1850	24,564	43,072	31,992	99,566	57,145	48,638	73,363	45,646	20,054
1860	28,580	43,545	30,866	105,202	63,812	50,157	86,328	51,729	20,002
1870	28,699	43,522	34,457	110,008	80,902	48,967	99,549	51,529	21,347
1880	31,416	44,112	38,315	115,475	88,220	51,397	115,328	55,156	23,538

TABLE I.—POPULATION OF COUNTIES, 1790 TO 1880 — (*Concluded*).

	Schoharie (most).	Sullivan (former).	Ulster (most).	Warren (one-half).	Washington (most)	Bennington county, Vt.	Berkshire county, Mass.	Sussex county, N.J.	Passaic county, N.J.
1790	.....	.....	29,397	.....	14,042	12,254	30,291	19,500	.....
1800	9,808	.....	24,855	.....	35,792	14,617	33,885	22,534	.....
1810	18,945	6,108	26,576	.....	44,289	15,893	35,907	25,549	.....
1820	23,147	8,900	30,934	9,453	38,831	16,125	35,720	32,752	.....
1830	27,902	12,364	36,550	11,796	42,635	17,468	37,835	20,346	.....
1840	32,358	15,629	45,822	13,422	41,080	16,872	41,745	21,770	16,734
1850	33,548	25,088	59,384	17,199	44,750	18,589	49,591	22,989	22,569
1860	34,469	32,385	76,381	21,434	45,904	19,436	55,120	23,846	29,013
1870	33,340	34,550	84,075	22,592	49,568	21,325	64,827	23,168	46,416
1880	32,910	32,491	85,838	25,179	47,871	21,950	69,032	23,539	68,860

The results of the census of 1890 will probably be obtained before the next year's report, and a statement of the localities where growth has taken place and the reasons therefor will be given. It will be seen from the smaller map accompanying, which represents the relative density of population according to the census of 1880, that the population is more dense in the counties whose drainage into the river is most direct, with the single exception of Orange county. This is due to the character of soil in these counties as well as to the proximity to the river or its tributaries.

Another significant fact, bearing on the question of the increase in pollution of the river and its tributaries is the increase in population in cities and villages, even in those counties in which the total population remains nearly stationary or decreases. This is significant for two reasons, the population is concentrated and the amount of drainage from human habitations reaching the rivers directly is much increased, and these cities and villages are most numerous and largest on the larger streams. This is shown quite clearly in the following table, which gives the populations in the towns, cities, incorporated villages and villages not incorporated for the years 1870 and 1880. It is also shown by the location of the cities and villages. This table will be extended in the next report to include the results of the census of 1890. The smaller map accompanying shows the location of the incorporated cities and villages in 1880, and the larger map shows the location of all places with a population of 200 or over according to the census of 1880. The tendency of the population centers to form near the larger streams is quite clear in both maps.

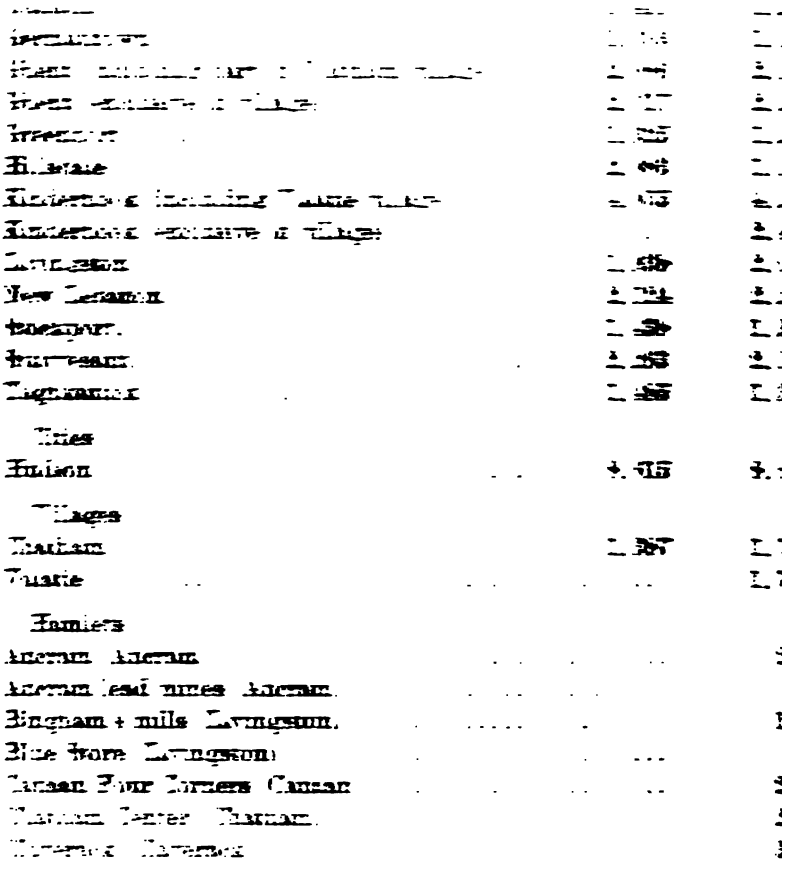
TABLE II.

POPULATION OF TOWNS, CITIES AND VILLAGES.

Albany County.

Towns:	1870.	1880.
Berne	2,562	2,616
Bethlehem	6,950	3,752
Coeymans	3,077	2,912
Guilderland	3,132	3,459
Knox	1,656	1,694
New Scotland	3,411	3,251
Rensselaerville	2,492	2,488

	1870.	1880.
Watervliet (including Green Island and West Troy)	22,609	22,220
Watervliet (exclusive of villages)	8,781	9,240
Westerlo	2,384	2,324
Cities :		
Albany	69,422	90,758
Cohoes	15,357	19,416
Villages :		
Green Island	3,135	4,160
West Troy	10,693	8,820
Hamlets :		
Berneville (Berne)	250	.....
Chesterville (Westerlo)	247	167
Clarksville (New Scotland)	236	260
Coeymans (Coeymans)	.....	654
Connersville [Williamsburgh] (Rensselaer)	.....	22
Cooksburg (Rensselaerville)	67	82
Dunnsville (Guilderland)	.....	46
East Berne (Berne)	.....	490
Guilderland Center (Guilderland)	.....	222
Knowersville (Guilderland)	.....	329
Knox (Knox)	.....	182
Medusa (Rensselaerville)	94	141
New Salem (New Scotland)	219	175
New Scotland (New Scotland)	103	.....
Potter's Hollow (Rensselaerville)	138	91
Preston Hollow (Rensselaerville)	284	212
Reidsville (Berne)	.....	227
Rensselaerville (Rensselaerville)	526	393
Shaker (Watervliet)	.....	139
South Berne (Berne)	50	.....
South Bethlehem (Bethlehem)	.....	89
South Westerlo (Westerlo)	147	.....
West Albany (Watervliet)	.....	367
West Berne (Berne)	100	.....
Williamsburgh [or Connersville] (Rensselaer)	.....	22
Towns : *Columbia County.*		
Ancram	1,793	1,602
Austerlitz	1,442	1,341



	1870.	1880.
Harlemville (Hillsdale)	.....	60
Hillsdale (Hillsdale)	.....	326
Hollowville (Claverack)	.....	132
Johnston (Livingston)	.....	150
Malden (Chatham)	.....	244
Martindale (Claverack)	.....	59
Mellenville (Claverack)	.....	360
Niverville (Kinderhook)	.....	219
North Chatham (Chatham)	.....	163
Old Chatham (Chatham)	.....	242
Philmont (Claverack)	699	1,343
Queecby (Canaan)	.....	64
Rayville (Chatham)	.....	31
Red Rock (Canaan)	.....	92
Rider's Mills (Chatham)	.....	52
Rossman's Mills (Stockport)	.....	88
Shaker (Canaan)	.....	59
Stockport (Stockport)	.....	302
Stottville (Stockport)	.....	720
Stuyvesant (Stuyvesant)	.....	925
Taghkanick (Taghkanick)	.....	72
Delaware County.		
Towns:		
Roxbury	2,188	2,344
Dutchess County.		
Towns:		
Beekman	1,486	1,578
Clinton	1,708	1,640
East Fishkill	2,306	2,574
Fishkill	11,752	.....
Fishkill and Wappinger (including Fishkill Landing village)	15,693	10,732
Fishkill and Wappinger (exclusive of village)	8,760	13,190
Hyde Park	2,695	2,873
LaGrange	1,774	1,745
Milan	1,474	1,275
Northeast (including Millerton village)	2,179	2,181
Northeast (exclusive of village)	.....	1,581
Pawling	1,760	2,006

	1870.	1880.
Pine Plains	1,503	1,352
Pleasant Valley	1,963	1,785
Poughkeepsie	4,009	4,628
Red Hook (including Tivoli village)	4,350	4,471
Red Hook (exclusive of village)	3,898	3,217
Rhinebeck (including Rhinebeck village)	3,719	3,902
Rhinebeck (exclusive of village)	2,397	2,333
Stanford	2,116	2,092
Union Vale	1,434	1,407
Wappinger	....	4,961
Washington	2,792	2,797
Cities:		
Poughkeepsie	20,080	20,207
Villages:		
Fishkill Landing	2,992	2,503
Millerton	.....	600
Tivoli	452	1,254
Rhinebeck	1,322	1,569
Wappingers' Falls	2,263	.....
Hamlets:		
Annandale (Red Hook)	347	91
Annandale Hamlet (Red Hook)	.....	130
Bangall (Stanford)	.....	154
Barrytown (Red Hook)	248	239
Barrytown Corners (Red Hook)	....	75
Baxtertown (Wappingers)	.....	30
Beekman (Beekman)	.....	105
Byrnesville (Fishkill)	.....	217
Carthage Landing (Wappingers)	.....	251
Charmingville (Poughkeepsie)	1,350	.....
Fishkill (Fishkill)	737	682
Glenham (Fishkill)	924	1,353
Groveville (Fishkill)	....	379
Hughsonville (Wappingers)	.....	682
Hyde Park (Hyde Park)	600	715
LaFayetteville (Milan)	....	79
LaGrangeville (LaGrange)	.....	324
Madalin (Red Hook)	629	.....
Matteawan (Fishkill)	2,406	4,411

	1870.	1880.
Middle Brush (Wappingers)	.....	61
New Carthage (Fishkill)	241	.....
New Hamburgh (Poughkeepsie)	400	501
Pine Plains (Pine Plains)	401	529
Pleasant Valley (Pleasant Valley)	.....	429
Red Hook (Red Hook)	861	936
Rhinecliff (Rhinebeck)	.....	585
Rochdale (Poughkeepsie)	75	129
Rock City (Milan)	.....	56
Stanfordville (Stanford)	.....	340
Titusville (LaGrange)	.....	79
Upper Red Hook (Red Hook)	206	184
Verbank (Unionvale)	.....	144
(Pawling, pop. 580, drains into the Hudson through the Croton)	.....	.....
Essex County.		
Towns:		
Crown Point	2,449	4,287
Keene	720	910
Minerva	908	1,162
Moriah (including Port Henry village)	4,683	7,379
Moriah (exclusive of village)	.....	4,885
Newcomb	178	237
North Hudson	738	693
Schroon	1,899	1,731
Hamlets:		
Schroon Lake (Schroon)	.....	324
Olmsteadville (Minerva)	.....	173
Fulton County.		
Towns:		
Bleecker	970	1,046
Broadalbin	2,492	2,175
Caroga	828	855
Ephratah	2,207	2,157
Johnstown (including Gloversville and Johnstown villages)	12,273	16,626
Johnstown (exclusive of villages)	4,473	4,480
Mayfield	2,241	2,231
Northampton	1,927	2,069

	1875.	1880.
Herkimer (including Herkimer village)	2,949	3,593
Herkimer (exclusive of village)	1,729	1,234
Litchfield	1,384	.....
Little Falls (including part of Little Falls village)	5,612	6,913
Little Falls (exclusive of village)	.....	934
Manheim (including part of Little Falls village)	2,000	2,421
Manheim (exclusive of village)	.....	1,490
Newport (including Newport village)	1,954	1,953
Newport (exclusive of village)	1,303	1,240
Norway	1,117	1,045
Ohio	1,009	961
Russia	2,220	2,177
Salisbury	1,933	1,884
Schuyler	1,558	1,452
Stark	1,541	1,476
Warren	1,503	1,430
Wilmurt	191	271
Winfield	1,561	1,597
Villages:		
Frankfort	1,083	1,085
Ilion	2,876	3,711
Mohawk	1,404	1,441
Herkimer	1,220	2,359
Newport	651	713
Little Falls	5,387	6,910
Hamlets:		
Cold Brook (Russia)	170	117
Columbia Center (Columbia)	.....	99
Fairfield (Fairfield)	281	150
Grant (Russia)	71	117
Gravesville (Russia)	67	72
Middleville (Newport and Fairfield)	406	533
Miller's Mills (Columbia)	.....	166
Newville	112	.....
Norway (Norway)	.....	140
Poland (Russia and Newport)	.....	282
Russia Corners (Russia)	58	.....
Salisbury Center (Salisbury)	.....	341

	1870.	1880.
Salisbury Corners (Salisbury)	.....	124
Shulltown (German Flats)	.....	144
South Ilion (German Flats)	.....	104
Starkville (Stark)	174	.....
Van Hornesville (Stark)	169	199
Lewis County.		
Town:		
Lewis	1,252	1,161
Hamlet:		
West Leyden (Lewis)	.....	181
Madison County.		
Towns:		
Madison (including Madison village)	2,402	2,474
Madison (exclusive of village)	.....	2,154
Montgomery County.		
Towns:		
Amsterdam (including Amsterdam village)	7,706	11,710
Amsterdam (exclusive of village)	2,280	2,244
Canajoharie (including Canajoharie village)	4,256	4,294
Canajoharie (exclusive of village)	2,434	2,281
Charleston	1,601	1,334
Florida	3,002	3,249
Glen (including Fultonville village)	2,782	2,622
Glen (exclusive of village)	1,665	1,741
Minden (including Fort Plain village)	4,600	5,100
Minden (exclusive of village)	2,803	2,657
Mohawk (including Fonda village)	3,015	2,943
Mohawk (exclusive of village)	1,923	1,999
Palatine (including Nelliston and Palatine Bridge villages)	2,814	2,789
Palatine (exclusive of villages)	.....	1,896
Root	2,492	2,275
St. Johnsville (including St. Johnsville village)	2,189	2,002
St. Johnsville (exclusive of village)	813	930
Villages:		
Amsterdam	5,426	9,466
Canajoharie	1,822	2,013
Fultonville	1,117	881

Fort Plain	1,797	[illegible]
Fonda	1,892	[illegible]
Kellogton	[illegible]	[illegible]
Palatine Bridge	[illegible]	[illegible]
St. Johnsville	1,[illegible]	[illegible]
Hamlets:		
Amos (Canajoharie)	[illegible]	[illegible]
Amsterville (Glen)	[illegible]	[illegible]
Burtonville (Charleston)	[illegible]	[illegible]
Charleston (Charleston)	[illegible]	[illegible]
Charleston Four Corners (Charleston)	[illegible]	[illegible]
Crane's (Amsterdam)	[illegible]	[illegible]
Fonda bush (Minden)	[illegible]	[illegible]
Fort Hunter (Florida)	[illegible]	[illegible]
Hagaman's Mills (Amsterdam)	[illegible]	[illegible]
Mapletown (Canajoharie)	[illegible]	[illegible]
Glen (Glen)	[illegible]	[illegible]
Minesville (Florida)	[illegible]	[illegible]
Mindenville (Minden)	[illegible]	[illegible]
Oak Ridge (Charlestown)	[illegible]	[illegible]
Port Jackson (Florida)	446	715
Rural Grove (Root)	[illegible]	117
Scotch Bush (Florida)	120	95
Spraker's Basin (Root)	[illegible]	219
Sprout Brook (Canajoharie)	[illegible]	72
Tribes Hill (Amsterdam, 150; Mohawk, 215)	365	[illegible]
Upper St. Johnsville (St. Johnsville)	[illegible]	149

Oneida County.

Towns:		
Augusta	2,067	2,171
Ava	1,160	1,039
Boonville (including Boonville village)	4,106	3,996
Boonville (exclusive of village)	2,688	2,319
Deerfield	2,045	2,082
Floyd	1,209	1,115
Kirkland (including Clinton village)	4,912	4,984
Kirkland (exclusive of village)	3,272	3,748
Lee	2,656	2,360
Marcy	1,451	1,413
Marshall	2,145	2,276

	1870.	1880.
New Hartford (including New Hartford village)	4,037	4,394
New Hartford (exclusive of village)	3,294	3,684
Paris	3,575	3,573
Remsen	1,184	1,195
Sangerfield	2,513	3,171
Steuben	1,261	1,223
Trenton (including Trenton village)	3,156	3,097
Trenton (exclusive of village)	2,862	2,808
Vernon (including Oneida Castle and Vernon villages)	2,840	3,056
Vernon (exclusive of villages)	2,187	2,472
Western	2,423	2,264
Westmoreland	2,952	2,744
Whitestown (including Whitesboro village)	4,339	4,498
Whitestown (exclusive of village)	3,375	3,128
Cities:		
Rome	11,000	12,194
Utica	28,804	33,914
Villages:		
Clinton	1,640	1,236
New Hartford	743	710
Trenton	294	289
Waterville	1,182	.....
Whitesboro	964	1,370
Hamlets:		
Cassville (Paris)	152	226
Clark's Mills (Kirkland)	420	393
Clayville (Paris)	944	847
Deansville (Marshall)	195	200
Deerfield Corners (Deerfield)	.....	716
Delta (Lee)	270	186
Floyd Corners (Floyd)	95	.....
Forge Hollow (Marshall)	.....	99
Franklin Iron Works (Kirkland)	379	352
Gang Mills (Trenton)	104	.....
Holland Patent (Trenton)	320	401
Holman City (Paris)	75	.....
Kirkland (Kirkland)	158	132
Hecla (Westmoreland)	125	.....

Lower New York Mills (Whitestown)	.....	373
New York Mills proper (Whitestown)	1,554	902
New York Upper Mills (New Hartford)	.....	931
Northwestern (Western)	.....	153
Oneida (Whitestown)	584	527
Oneida Falls (Augusta)	625	536
Pleasant Valley (Whitestown)	87	.....
Prospect (Trenton)	312	326
Sauquoit Park	459	.....
South Trenton (Trenton)	206	134
Remsen (Remsen)	269	.....
Starwix (Rome)	.....	96
Smithville (Trenton)	243	184
Trenton Falls (Trenton)	128	138
Vernon Center (Vernon)	.....	190
West Branch (Lee)	97	.....
Westernville (Western)	255	206
Westmoreland (Westmoreland)	444	403
Wolcottville (Whitestown)	115	.....
Yorkville (Whitestown)	213	295

Orange County.

Towns		
Blooming Grove	2,562	2,444
Chester	2,116	2,229
Cornwall and Highland	5,089	7,237
Crawford	2,024	1,951
Goshen (including Goshen village)	3,843	4,387
Goshen (exclusive of village)	1,698	1,830
Greenville	1,123	1,002
Hamptonburgh	1,224	1,143
Highland	.....	3,404
Minisink (including Unionville village)	1,443	1,360
Minisink (exclusive of village)	.....	1,044
Monroe	4,666	5,096
Montgomery (including Montgomery and Walden villages)	4,536	4,795
Montgomery (exclusive of villages)	2,322	2,056
Mount Hope	1,842	1,549
Newburgh	3,541	3,918

	1870.	1880.
New Windsor	2,482	2,576
Wallkill (including Middletown village)	9,477	11,486
Wallkill (exclusive of village)	3,428	2,992
Warwick (including Warwick village)	5,736	5,699
Warwick (exclusive of village)	4,798	4,656
Wawayanda	1,900	1,879
Cities:		
Newburgh	17,014	18,049
Villages:		
Goshen	2,205	2,557
Unionville	....	316
Montgomery	960	935
Walden	1,254	1,804
Middletown	6,049	8,494
Warwick	938	1,043
Hamlets:		
Amity (Warwick)	.....	131
Bellvale (Warwick)	.....	179
Chester (Chester)	666	.....
Cornwall Landing (Cornwall)	200	.....
Edenville (Warwick)	.....	130
Florida (Warwick)	459	555
Highland Falls (Highland)	.....	1,976
Highland Mills (Monroe)	.....	490
Howell's Depot (Wallkill)	.....	156
Monroe (Monroe)	.....	459
New Milford (Warwick)	.....	98
New Vernon (Mount Hope)	.....	55
Otisville (Mount Hope)	.....	471
Pine Island (Warwick)	.....	65
West Point (Highlands)	942	1,131
West Town (Minisink)	.....	175
Otsego County.		
Towns:		
Cherry Valley (including Cherry Valley village)	2,337	2,260
Cherry Valley (exclusive of village)	1,407	1,404
Village:		
Cherry Valley	930	856

Rensselaer County.

	1870.	1880.
Towns:		
Berlin	2,088	2,202
Brunswick	3,128	3,402
East Greenbush	1,845	2,127
Grafton	1,599	1,676
Greenbush (including Greenbush village)	6,202	6,743
Greenbush (exclusive of village)	.....	3,448
Hoosick (including Hoosick Falls village)	5,728	7,914
Hoosick (exclusive of village)	.....	3,384
Lansingburgh (including Lansingburgh village)	6,804	7,759
Lansingburgh (exclusive of village)	432	327
Nassau	2,705	2,629
North Greenbush (including Bath-on-the-Hudson village)	3,058	4,131
North Greenbush (exclusive of village)	1,593	2,085
Petersburgh	1,732	1,785
Pittstown	4,093	4,095
Poestenkill	1,769	1,672
Sand Lake	2,633	2,550
Schaghticoke (including Harts Falls village),	3,125	3,591
Schaghticoke (exclusive of village)	2,014	2,316
Schodack (including Castleton village)	4,442	4,319
Schodack (exclusive of village)	3,862	3,407
Stephentown	2,133	1,986
City:		
Troy	46,465	56,747
Villages:		
Greenbush	.....	3,295
Hoosick Falls	.....	4,530
Lansingburgh	6,372	7,432
Bath-on-the-Hudson	1,465	2,046
Hart's Falls	1,111	1,275
Castleton	580	912
Hamlets:		
Berlin (Berlin)	.....	465
Brainard (Nassau)	168	83
DeFreestville (North Greenbush)	.....	90
East Nassau (Nassau)	192	88

	1870.	1880.
Johnsonville (Pittstown)	500	397
Muitzeskill (Schodack)	.....	62
Nassau (Nassau)	348	449
North Hoosick (Hoosick)	.....	239
North Petersburg (Petersburg)	.....	149
Petersburg (Petersburg)	.....	315
Poestenkill (Poestenkill)	.....	250
Sand Lake (Sand Lake)	503	777
Schodack Landing (Schodack)	.....	401
South Schodack (Schodack)	.....	91
Valley Falls (Pittstown and Schaghticoke)	600	782
West Sandlake (Sandlake)	315	185
Wynantskill (North Greenbush)	140	176

Saratoga County.

Towns:		
Ballston (including part of Balston Spa village)	2,180	2,035
Ballston (exclusive of village)	1,836	1,652
Charlton	1,607	1,474
Clifton Park	2,657	2,454
Corinth	1,500	1,737
Day	1,127	1,238
Edinburgh	1,405	1,523
Galway (including Galway village)	2,174	1,902
Galway (exclusive of village)	.....	1,715
Greenfield	2,698	2,448
Hadley	1,039	1,095
Half Moon (including part of Mechanicville village)	3,093	3,102
Half Moon (exclusive of village)	2,512	2,352
Malta	1,212	1,234
Milton (including part of Ballston Spa village)	4,946	5,565
Milton (exclusive of village)	2,320	2,937
Moreau	2,256	2,555
Northumberland	1,655	1,583
Providence	1,155	994
Saratoga (including Schuylerville and Victory Mills villages)	4,052	4,539
Saratoga (exclusive of villages)	1,815	1,802

	1875.	1880.
Saratoga Springs (including Saratoga Springs village)	8,537	10,820
Saratoga Springs (exclusive of villages)	1,021	2,399
Stillwater (including Stillwater and part of of Mechanicville village)	3,401	3,413
Stillwater (exclusive of villages)	2,170	2,020
Waterford (including Waterford village)	3,631	4,328
Waterford (exclusive of village)	2,560	2,506
Wilton	1,204	1,118
Villages:		
Galway		187
Schuylerville	1,367	1,617
Victory Mills	870	1,120
Saratoga Springs	7,516	8,421
Stillwater	737	877
Waterford	3,071	1,822
Ballston Spa	2,970	3,011
Mechanicville	1,075	1,265
Hamlets:		
Barkersville (Providence)		50
Batchellerville (Edinburgh)	216	344
Beecher Hollow (Edinburgh)		107
Blatchville (Milton)		492
Brookside (or South Ballston) (Ballston)		80
Burnt Hills (Ballston)		180
Charlton (Charlton)		175
Cliff or Park (Half Moon)		49
Cobblingville (Halfmoon)		326
Corinth (Corinth)		510
Coveville (Day)		53
Crescent (Half Moon)		287
Dial City (Waterford)		365
East Day (Day)		124
Fairville (Providence)		67
Feeler Dam (Moreau)		220
Fosterville (Moreau)		50
Gansevoort (Northumberland)		159
Hagaman's Mills (Providence)		61
Middle Grove (Greenfield)		144
Middletown (Half Moon)		147
North Side (Waterford)		757

	1870.	1880.
Quaker Springs (Saratoga)	.....	150
Rexford's Flats (Clifton Park)	.....	163
Rock City Falls (Milton)	.....	303
South Ballston [or Branch] (Ballston)	.....	80
South Glens Falls (Moreau)	1,047	1,083
Victory Mills (Saratoga)	870	.....
Vischer's Ferry (Clifton Park)	.....	206
West Day (Day)	.....	93
West Milton (Milton)	.....	241
West Waterford (Waterford)	.....	441
Wiltonville (Wilton)	.....	81
Schenectady County.		
Towns:		
Duanesburgh	3,042	2,995
Glenville	2,973	2,746
Niskayuna	1,105	990
Princetown	846	826
Rotterdam	2,355	2,326
City:		
Schenectady	11,026	13,655
Hamlets:		
Braman's Corners (Duanesburgh)	.....	67
Duanesburgh (Duanesburgh)	.....	91
Mariaville (Duanesburgh)	.....	116
Niskayuna (Niskayuna)	.....	73
Quaker Street (Duanesburgh)	.....	250
Quaker Street Depot (Duanesburgh)	.....	163
Scotia (Glenville)	.....	222
Schoharie County.		
Towns:		
Blenheim	1,437	1,191
Broome	1,834	1,636
Carlisle	1,730	1,720
Cobleskill (including Cobleskill village)	2,847	3,370
Cobleskill (exclusive of village)	1,817	2,148
Conesville	1,314	1,127
Esperance	1,276	1,378
Fulton	2,700	2,683
Gilboa	2,227	2,040

	1870.	1880.
Jefferson	1,712	1,636
Middleburgh	3,180	3,376
Richmondville	2,307	2,082
Schoharie (including Schoharie village)	3,207	3,350
Schoharie (exclusive of village)	2,007	2,162
Seward	1,765	1,734
Sharon (including Sharon Springs village)	2,648	2,591
Sharon (exclusive of village)	2,128	1,964
Summit	1,631	1,405
Wright	1,525	1,591
Villages :		
Cobleskill	1,030	1,222
Schoharie	1,200	1,188
Sharon Springs	520	627
Hamlets :		
Argusville (Carlisle)		111
Blenheim (Blenheim)		221
Carlisle (Carlisle)		128
Central Bridge (Schoharie)		195
Esperance (Esperance)		341
Franklinton (Broome)		77
Gallupville (Wright)		258
Gilboa (Gilboa)		293
Grovenor's Corners (Carlisle)		60
Hunter's Land (Middleburgh)		172
Hyndsville (Seward)		129
Livingstonville (Broome)		97
Middleburgh (Middleburgh)	863	1,123
Richmondville (Richmondville)	630	653
Seward Valley (Seward)		141
Sloansville (Esperance)		200
South Gilboa (Gilboa)		50
Summit (Summit)		121
Warnersville (Richmondville)		263
Sullivan County.		
Towns:		
Fallsburgh	3,206	2,945
Mamakating (including Wurtsboro village)	4,866	3,845
Mamakating (exclusive of village)	4,069	3,307
Neversink	2,458	2,152

	1870.	1880.
Hamlets:		
Homowack (Mamakating)	.....	209
Phillipsport (Mamakating)	.....	661
Summitville (Mamakating)	.....	223
Ulster County.		
Towns:		
Denning	1,044	1,036
Esopus	4,557	4,736
Gardiner	1,991	1,794
Hurley	2,987	2,521
Kingston, Kingston city and Ulster	21,943	22,243
Kingston (exclusive of city and Ulster)	.....	1,093
Lloyd	2,658	2,713
Marbletown	4,223	3,970
Marlborough	2,975	3,472
New Paltz	2,040	1,958
Olive	3,083	2,927
Plattekill	2,031	2,205
Rochester	4,088	4,109
Rosendale	3,625	4,724
Saugerties (including Saugerties village)	10,455	10,375
Saugerties (exclusive of village)	6,724	6,452
Shandaken	2,751	2,829
Shawangunk	2,823	2,910
Wawarsing (including Ellenville village)	8,151	8,547
Wawarsing (exclusive of village)	.....	5,797
Woodstock	2,022	1,968
Ulster	.....	2,806
City:		
Kingston	17,429	18,344
Villages:		
Saugerties	3,731	3,923
Ellenville	.....	2,750
Hamlets:		
Butterville (New Paltz)	.....	35
Cliftondale (Plattekill)	.....	371
Corners (New Paltz)	.....	39
East Kingston (Ulster)	.....	484
Eddyville (Ulster)	.....	617
Flatbush (Saugerties)	.....	155

	1870	1880.
Gardiner (Gardiner)	.....	130
Glasco (Saugerties)	.....	900
Glenerie (Saugerties)	.....	124
Greenfield (Wawarsing)	.....	971
High Falls (Marbletown)	.....	571
Lapata (Marbletown)	.....	128
Libertyville (Gardiner)	.....	61
New Paltz (New Paltz)	425	493
Ohioville (New Paltz)	.....	44
Plattekill (Saugerties)	.....	574
Port Ewen (Esopus)	1,251	1,580
Sleightburg (Esopus)	203	282
South Rondout (Esopus)	405	493
Springtown (New Paltz)	.....	35
Tuthill (Gardiner)	.....	83
Whiteport (Rosendale)	.....	198
Woodstock (Woodstock)	.....	170

Warren County.

Towns:		
Bolton	1,135	1,132
Caldwell	1,041	1,223
Chester	2,329	2,247
Hague	637	807
Horicon	1,500	1,633
Johnsburg	2,599	2,742
Luzerne	1,174	1,438
Queensbury (including Glens Falls village)	8,387	9,805
Queensbury (exclusive of village)	3,887	4,905
Stony Creek	1,127	1,253
Thurman	1,084	1,174
Warrensburgh	1,579	1,725
Village:		
Glens Falls	4,500	4,900
Hamlets:		
Chester (Chester)	.....	349
Luzerne (Luzerne)	.....	468
Pottersville (Chester)	.....	168
Warrensburg (Warrensburg)	715	748
Weavertown (Johnsburg)	.....	176

Washington County.

Towns:	1870.	1880.
Argyle (including Argyle village)	2,850	2,775
Argyle (exclusive of village)	2,509	2,459
Cambridge (including part of Cambridge village)	2,589	2,324
Cambridge (exclusive of village)	2,026	1,835
Easton	3,072	2,740
Fort Edward (including Fort Edward village)	5,125	4,680
Fort Edward, (exclusive of village)	1,633	1,692
Greenwich (including Greenwich village)	4,030	3,860
Greenwich (exclusive of village)	.....	2,629
Hartford	1,989	1,760
Hebron	2,399	2,383
Jackson	1,662	1,562
Kingsbury (including Sandy Hill village)	4,277	4,614
Kingsbury (exclusive of village)	1,930	2,127
Salem (including Salem village)	3,556	3,498
Salem (exclusive of village)	2,317	2,088
White Creek (including part of Cambridge village)	2,881	2,742
White Creek (exclusive of village)	1,914	1,749
Villages:		
Argyle	351	316
Fort Edward	3,492	2,988
Greenwich	.....	1,231
Sandy Hill	2,347	2,487
Salem	1,239	1,410
Cambridge (Cambridge, 563; White Creek, 967)	1,530	1,482
Hamlets:		
Battenville (Greenwich)	.....	142
Belcher (Hebron)	.....	57
Buskirk's Bridge (White Creek)	.....	36
Eagle Bridge (White Creek)	.....	96
Eddyville (Easton)	.....	320
Fort Miller (Fort Edward)	.....	124
North Argyle (Argyle)	.....	95
North Hebron (Hebron)	.....	66
Shushan (Salem)	.....	328
South Argyle (Argyle)	.....	50

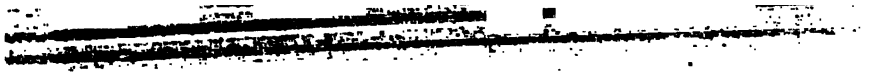
	1870.	1880.
The Hook (Argyle)	.....	41
West Hebron (Hebron)	.....	205
White Creek (White Creek)	.....	189
State of Vermont — Bennington County.		
Towns:		
Arlington	1,636	1,532
Bennington	5,760	6,333
Dorset	2,195	2,005
Glastonbury	119	241
Manchester	1,897	1,928
Pownal	1,705	2,019
Rupert	1,017	957
Sandgate	705	681
Shaftsbury	2,027	1,887
Stamford	633	726
Sunderland	553	655
Winhall	842	722
Woodford	371	487
Hamlets:		
Bennington	2,501	.....
Bennington Centre (Bennington)	.....	176
Bennington Falls (Bennington)	.....	36
East Dorset (Dorset)	.....	215
Factory Point (Manchester)	.....	466
North Bennington (Bennington)	.....	714
North Pownal (Pownal)	.....	566
Pownal (Pownal)	.....	424
Rupert (Rupert)	.....	105
South Shaftesbury (Shaftesbury)	.....	289
Stamford (Stamford)	.....	198
West Rupert (Rupert)	.....	158
State of Massachusetts — Berkshire County.		
Towns:		
Adams and North Adams	12,090	15,782
Adams	.....	5,591
Cheshire	1,758	1,537
Clarksburg	686	724
Hancock	882	642
Mt. Washington	256	205

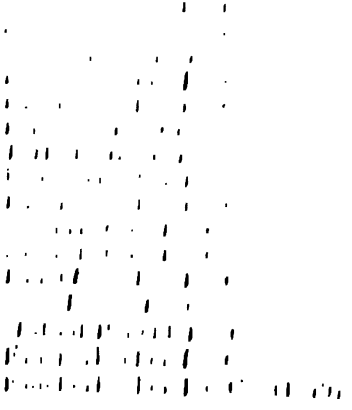
	1870.	1880.
New Ashford	208	203
North Adams	.....	10,191
Williamstown	3,559	3,394
Hamlets:		
Adams (Adams)	.....	2,388
Briggville (Clarksburg)	.....	189
Hancock (Hancock)	.....	129
Williamstown (Williamstown)	.....	984
State of New Jersey — Passaic County.		
Town:		
West Milford	2,660	2,591
Sussex County.		
Towns:		
Frankford	1,776	1,682
Hardiston	1,668	2,645
LaFayette	884	781
Sparta	2,032	2,274
Vernon	1,979	1,811
Wantage	3,636	3,361
Hamlets:		
Colesville (Wantage)	.....	90
Deckertown (Wantage)	.....	370
Franklin Furnace (Hardiston)	.....	799
Hamburg (Hardiston)	.....	412
Mount Salem (Wantage)	.....	38
Ogdensburgh (Sparta)	.....	562
Ogden Mine (Sparta)	.....	280
Sparta (Sparta)	.....	292
Vernon (Vernon)	.....	119

The extent to which the sewerage and drainage of the cities and villages has gone and the condition as to drainage of the smaller places which have no definite system of sewerage has been investigated carefully and a statement of the facts discovered is in preparation. The insertion of this statement in the next report is very desirable, and to avoid repetition this statement is reserved until next year. Where regular systems of sewerage are in operation the date of the construction of the sewers is determined as closely as possible, that an idea of the rapidity of increase in the

amount of polluting materials reaching the rivers directly may be obtained. It is found that practically all the sewers except in a city of the size of Albany, for example, have been built since 1870, and that a very large percentage have been built since 1880. The sewers in the smaller places have nearly all been built since 1880. The tendency at present is for all incorporated cities and villages, of whatever size, to provide themselves as rapidly as possible with both water-works and sewers. This tendency is much more marked in the last five years than ever before and indicates a rapid increase in the amount of pollution of the streams for a few years. When the results of the census of 1890 are at hand it will be possible, in connection with our information regarding the construction of sewers, to obtain an approximate estimate of the rate of this increase and some idea of the maximum to which it would approximate if the population did not increase. The increase in population for a reasonable number of years can then be estimated and the probable condition of the streams be arrived at. So far as the results of the last census have been made public they show the same thing that the former censuses have shown, viz.: For the eastern States a reduction in the rural population and an increase in the urban population of a greater amount, so that the net result is some increase in population for the whole State. It is probable that this will continue for some years yet until the western States are more densely populated and the conditions of rural life are made more nearly equal. The rural population of the east will then hold its own or increase, and will probably cause the population to increase on the whole more rapidly in the State. This phase of the question is not of so much interest in the discussion of our question as the marked increase in urban population and the marked increase in the desire of the inhabitants of even the smaller villages to have all the advantages of public water supplies and sewerage as well as other conveniences which are possible to aggregations of people. The natural place for man to live seems to be in company with his fellowman that he may secure the benefits of co-operation in many matters impossible of attainment by individuals or small numbers. The necessity for a complete determination of the facts as to use of streams for water supply and as sewers, and the interference of the one use with the other becomes greater, therefore, every year.

The use of the river and tributaries for economic purposes is very general. The magnitude of the interests involved is shown in the following tables. Some of these interests will inevitably be destroyed by the increase in pollution of the river and others will be very much injured. All will be affected to a greater or less degree. Table III shows the amount of ice put up on the Hudson river and gathered from its surface in 1879 and in 1889. A healthy growth in the business is shown. There has been some question the last year as to whether this growth would continue, owing to the number of ice-machines put into use on account of the short supply of natural ice last winter. The effect of the new processes upon the development of business along the old channels can only be determined by time, but I am disposed to think that the effect will not be great, though a certain proportion of it will doubtless be permanent. The figures for 1879 in the table are taken from the reports of the census for 1880. I am indebted to the *Ice Trade Journal*, of Philadelphia, for those of 1889.





Glasco	Glasco Ice Co	30,000	70,000
Evesport	Knickerbocker Ice Co	16,000	25,000
Smith's Landing	Sturges, Martin & Co	17,000	17,000
West Camp	Knickerbocker Ice Co	21,000	20,000
West Camp	National Ice Co	40,000	45,000
West Camp	New Jersey Ice Co	35,000	37,000
West Camp	Consumers' Ice Co	81,000	90,000
Germantown	Rockefeller & Co. (1879)	11,000	.....
Germantown	Lasher & Co	.....	9,000
Germantown	A. Washburne	.....	11,000
New Paltz	Knickerbocker Ice Co. (1879)	12,000	.....
Catskill	Knickerbocker Ice Co. (1879)	43,000	.....
Catskill	H. Van Steenburgh (1879)	17,000	.....
Catskill point	Knickerbocker Ice Co	.....	29,000
Catskill creek	Knickerbocker Ice Co	.....	16,000
Catskill creek	J. Avery	.....	4,500
Rodgers' island	Knickerbocker Ice Co	26,000	30,000
Hamburg	New York City Ice Co	75,000	92,000
Hamburg	Knickerbocker Ice Co	19,000	23,000
Athens	Arrow Ice Co	33,000	33,000
Athens	Howland & Son	11,000	11,500
Athens	Theodore Avery	8,000	12,000
Athens	Hudson River Ice Co	30,000	32,000
Athens	Knickerbocker Ice Co	85,000	104,000
Athens	Ridgewood Ice Co	.....	35,000
Four Mile point	Brewers' Ice Co	55,000	55,000
Four Mile point	H. Rogers	12,000	13,000
Four Mile point	James Saunders	8,000	8,000
Pine Grove	Knickerbocker Ice Co	51,000	57,000
Stockport	Stockport Ice Co (1879)	35,000	.....
Coxsackie	Knickerbocker Ice Co	126,000	121,000

TABLE III — LIST OF ICE-HOUSES ON THE HUDSON RIVER — (*Continued*).

LOCALITY.	Owner, 1889.	Capacity, 1879.	Capacity, 1889.
Coxsackie	Hudson River Ice Co	17,000	17,500
Coxsackie	Rea Bros	6,500	6,500
Coxsackie	National Ice Co	42,000	55,000
Coxsackie	Green County Ice Co	12,000	15,000
Coxsackie	David Terry (1879)	1,500	.....
Coxsackie	Scott & Co	.....	56,000
Coxsackie Island	Ridgewood Ice Co	55,000	74,000
Stuyvesant	New Jersey Ice Co	20,000	27,000
Stuyvesant	Scott & Co	15,000	19,000
Stuyvesant	Yonkers City Ice Co	40,000	45,000
New Baltimore	Chaddon, Bronk & Gay	10,000	12,000
New Baltimore	A. J. Vanderpool	8,000	11,000
New Baltimore	Horton & Co.	20,000	21,000
New Baltimore	Knickerbocker Ice Co	25,000	26,000
New Baltimore	Vanderpool, Van Orden & Co	10,000	12,500
New Baltimore	Smith & McCable	11,000	22,000
New Baltimore	Horton & Co	12,000	12,000
Schodack channel	Scott & Co	15,000	18,000
Schodack channel	McCabe Bros	10,000	30,000
Schodack channel	Gardenier & Schermerhorn	20,000	26,000
Schodack channel	Knickerbocker Ice Co	50,000	53,000
Schodack channel	Downer & Gardiner	6,000	6,500
Roah Hook	Knickerbocker Ice Co	20,000	24,000
Ziegler's Island	Knickerbocker Ice Co	12,000	15,000
Barren Island	Knickerbocker Ice Co	35,000	38,000
Coeymans	John N Briggs	10,000	31,000

Coeymans	Knickerbocker Ice Co	33,000	38,000
Coeymans	Bean & Parker (1879)	8,000	
Coeymans	James A. Warren	18,000	
Coeymans	Witbeck & Co		16,000
Castleton	C. Warren	15,000	20,000
Castleton	W. H. Phibbs (1879)	10,000	
Castleton	H. Buckley (1879)	4,000	
Castleton	F. E. Bean	8,000	20,000
Castleton	Miller & Ostrander (1879)	4,500	
Castleton	Yonkers' Ice Co	30,000	32,000
Castleton	Ridgewood Ice Co	65,000	68,000
Castleton	Commonwealth Ice Co	21,000	20,000
Castleton	Archibald Scott		25,000
Castleton	Baker & Son	8,000	10,000
Castleton	Montaisk Ice Co		30,000
Castleton	Grill, Gorman & Co		20,000
Campbell's Island	R. English & Co	30,000	40,000
Cedar Hill	R. English & Co. (1879)	35,000	
Cedar Hill	Allen & Co. (1879)	5,000	
Staats	Herrick & Co	10,000	20,000
Staats	Parker & Shute		7,000
Van Wie's Point	Central Ice Co	65,000	55,000
Jolly Island	Knickerbocker Ice Co	39,000	7,000
Douw's Point	J. Patterson	6,000	6,000
Douw's Point	Gascoigne Bros. (1879)	4,500	
Douw's Point	Lawrence & Clark		18,000
Douw's Point	McIntire & Co		10,000
Douw's Point	Empire City Ice Co		20,000
Bogart Island	Knickerbocker Ice Co		5,000
Greenbush	S. Vrooman & Co. (1879)	15,000	
Greenbush	H. D. Mould	25,000	30,000

TABLE III — LIST OF ICE-HOUSES ON THE HUDSON RIVER — (*Concluded*).

LOCALITY.	Owner, 1880.	Capacity, 1879.	Capacity, 1880.
Greenbush	Smith & Rysdorf	15,000	19,000
Greenbush	C. Warren & Son (1879)	4,000	.....
Albany	H. Houghtaling (1879)	13,000	.....
Albany	Knickerbocker Ice Co.	28,000	28,000
Albany	R. G. Wilbur	19,000	7,500
Albany	F. E. Bean	25,000	30,000
West Troy	Tilley & Littlefield	.....	40,000
Total capacity		2,586,800	2,908,000

The amount harvested in any given year depends upon the severity of the winter season. Sometimes as much as 500,000 tons in addition to the nominal capacity of the houses is stacked outside and disposed of before the warm season opens. The value of the ice varies greatly from time to time, and may have a wholesale price from about one dollar a ton up.

Table IV gives as full a statement as it was possible to obtain of the water-works systems of corporations on the Hudson watershed. Some of the statements are from official reports, some from personal interviews with officials, and some from the Manual of American Water-Works, published by Engineering News.

TABLE IV.

STATISTICS OF WATERWORKS ON WATERSHED OF HUDSON RIVER.

No.	CITY	Population in 1900	Population in 1890	Year introduced	By whom owned.	Source of supply.	Mode of supply.
1	Albany	94,151	94,923	1851 1870	City	Surface water and Hudson river	Gravity and pumpage to reservoir
2	Albany (new works proposed to Rabbit Lake)						
3	Ancram	1,146	1,000	1901	City	Surface water	Gravity.
4	Castleton	1,011	1,000	1901	Village	Springs	Gravity
5	Catskill-on-the-Hudson	4,006	4,000	1901	Greenbush Co.	Rea Greenbush	
6	Coeymans	1,411	1,000	1896	Company	Springs	Pumpage to reservoir
7	Coxsackie	4,013	4,000	1901 1894	Company	Springs	Gravity and pumpage to reservoir
8	Cropseyville	1,150	1,000	1901	Village	Hudson river	Pumpage to reservoir
9	Cropsthorn	1,205	1,000	1896	Company	Andrew's wells	Pumpage to reservoir
10	Greenport	1,500	1,000	1894	Village	Miller Brook	Gravity
11	Hudson Falls	4,000	4,000	1901	Village	Springs and surface water	Gravity
12	Cohoes	19,419	21,000	1871 1894	City	Mohawk river	Pumpage to reservoir
13	Coxsackie (new works proposed)						
14	East Albany (see Greenbush)						
15	Ellenville	2,750	4,000	1901	Village	Mountain brooks	Gravity
16	Fishkill-on-the-Hudson and Matteawan		15,000	1900	Company	Surface water	Gravity.
17	Fonda	911	1,000	1895	Village	Springs	Gravity.
18	Fort Edward	2,000			Company	Springs	Gravity.
19	Fort Plain	2,444	4,000	1899	Company	Springs.	Gravity.
20	Fultonville	801	1,700	1878	Company	Springs	Gravity
21	Glens Falls	4,600	8,000	1874	Village	Springs	Gravity.
22	Gloversville	7,123	10,000	1877	Village	Springs and brooks	Gravity.
23	Goshen	2,567	3,000	1871	Village	Springs and surface water	Gravity.
24	Greenbush, Rath on the Hudson, East Albany		9,000	1897	Company	Hudson river	Pumpage to stand pipe.
25	Green Island and West Troy (new supply)	4,100	8,000	1900	Company	Hudson river	Pumpage to stand pipe and direct
26	Greenwich	1,211	2,000	1897	Company	Springs	Gravity
27	Herkimer	2,129	4,000	1899	Village	Driven wells	Pumpage to tank.

28	Hoosick Falls	4,530	7,000	1886	Company	Wells	Pump to tank.
29	Hudson	8,670	10,000	1875	City	Hudson river	Pump to reservoir.
30	Johnstown	5,013	8,000	1878 / 1885	Village	Springs and surface water	Gravity.
31	Kingston	18,344	23,000	1883	Company	Sawkill creek	Gravity.
32	Lansingburgh	7,432	9,000	1884	Village	Oil-mill creek	Gravity.
33	Little Falls	6,910	10,000	1885	Village	Beaver creek	Gravity.
34	Matteawan (see Fishkill-on-the-Hudson)	.....	.....	.....	.....	.....	.....
35	Middletown	8,494	9,000	1867	City	Springs and Shawangunk kill	Gravity and pump to reservoir.
36	Newburgh	18,049	20,000	1853	City	Washington lake, Silver creek	Gravity and pump.
37	New York Mills	902	.....	.....	Company	Springs	Pump direct.
38	Northville (in process of construction)	.....	.....	.....	.....	.....	.....
39	Poughkeepsie	20,207	22,000	1870	City	Hudson river	Pump to reservoir.
40	Prattsville	.....	600	1885	Company	Huntersfield creek	Gravity.
41	Rome	12,194	14,000	1872	City	Mohawk river	Pump to reservoir.
42	Round Lake	*300	†1,500	1887	Company	Springs	Reservoir, pump to tanks.
43	St. Johnsville	1,072	1,200	1879	Village	Springs	Gravity.
44	Sandy Hill	2,487	3,000	1888	Company	Springs and brook	Pump to stand-pipe.
45	Saratoga Springs	8,421	‡14,000 / †30,000	1871	Village	Springs and lake	Pump direct.
46	Sangerties	3,923	6,000	1887	Company	Plattekill	Gravity.
47	Schenectady	13,655	20,000	1871	Company (city, 1885)	Mohawk river	Pump direct.
48	Shushan (projected, indefinite)	.....	.....	.....	.....	.....	.....
49	Troy	56,747	60,000	1833 / 1880	City	Piscawen creek, Hudson river	Gravity and pump to reservoir.
50	Utica	33,914	45,000	1849	Company	Springs and surface water	Gravity.
51	Warrensburgh	748	.....	1884	Company	Brooks and springs	Gravity.
52	Warwick	1,043	1,300	1872	Village	Springs and surface water	Gravity.
53	Waterford	1,822	5,000	1856	Company	Hudson river	Pump to tank.
54	Waterville	.....	3,000	1888	Village	Surface water	Gravity.
55	West Troy and Green Island (old supply)	8,820 / 4,160	12,000 / 5,000	1876	Company	Surface water and Mohawk river	Pump to reservoir.
56	Whitesboro	1,371	1,800	1827	Company	Springs	Gravity.

* Winter. † Summer. ‡ Resident.

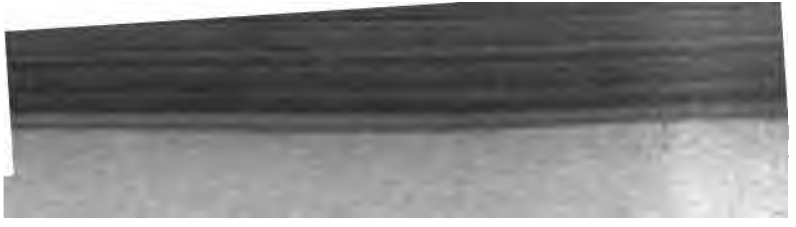


TABLE IV — (*Continued*).

nsumption allons.	Annual expenses.	Miles of pipe.	Filtration.	Sewers.
000 in 1879 000 in 1884	$30,566 in 1883	80 in 1883. 90.65 in 1887.	.....	Has sewers.....
.....	.....	.....	.....	.....
)00 in 1884)00 in 1889	2,000 in 1884 5,089 in 1889	12.7 in 1884. 19.75 in 1889.	No	Has sewers.....
)00 in 1889	150 in 1884 500 in 1889	11 in 1884. 12 in 1889.	.....	Partially .....
.....	.....	4 in 1889 ...	.....	.....
00 in 1889	200 in 1889	6.5 in 1889 ...	.....	No sewers.....
00 in 1884)0 in 1889	100 in 1884 200 in 1887	2 in 1884 ...	.....	.....
)0 in 1889	3,810 in 1887 5,108 in 1889	8.5 in 1884. 12 in 1889.	.....	No sewers.....
)0 in 1887)0 in 1889	2,000 in 1887 1,600 in 1889	3 in 1887. 5 in 1889	.....	--

23	40,000 in 1880			150 in 1884	6	in 1884					
	60,000 in 1884			400 in 1889							
	75,000 in 1889										
24	200,000 in 1889	323,40	in 1889	3,660 in 1889	10	in 1889				Has sewers	
25	125,000 in 1889	1,020,000	in 1880	5,000 in 1889	3	in 1889	Filter gallery on Gravel Island			Has sewers	
26	38,000 in 1889			± 800 in 1889	6	in 1889				No sewers	
27	50,000 in 1889	80,000	in 1889		7	in 1889	Wells 100 feet from West Canada creek				
28	±115,000 in 1889	180,000	in 1889	± 2,000 in 1889	8.5	in 1889				Some sewers	
29	± 257,650 in 1890	820,000	in 1880	7,820 in 1880	12.5	in 1880					
	260,977 in 1883	1,271,574	in 1883	10,352 in 1883	14	in 1883	Filter			Some sewers	
	318,533 in 1890	1,742,495	in 1890	13,291 in 1890	16	in 1890					
30	60,000 in 1884			1,723 in 1884	8	in 1884				Has sewers	
	124,121 in 1889	500,000	in 1884	2,100 in 1890	12	in 1897					
31	300,000 in 1884				23.5	in 1884					
	600,000 in 1887	2,000,000	in 1887	4,580 in 1887	33.5	in 1887	Filter			A few sewers	
32	160,000 in 1887			8,000 in 1887	14	in 1887					
	300,000 in 1887	400,000	in 1887		17	in 1887	Filter			Some sewers	
33	306,000 in 1889	1,000,000	in 1889	4,580 in 1889	26.5	in 1889					
34									In progress.		
35	150,000 in 1880			2,000 in 1880	8	in 1880					
	180,721 in 1884	1,000,000	in 1880	1,669 in 1884	14	in 1884				Sewers	
	196,781 in 1889			16,471 in 1889	17	in 1889					
	105,000 in 1870			2,000 in 1890	13	in 1890					
36	464,745 in 1884	1,200,000	in 1884	5,975 in 1884	29	in 1884					
	524,105 in 1889	2,000,000	in 1889	10,662 in 1889	33	in 1889					
37					2						
38											
	542,614 in 1880	1,403,292	in 1880	18,626 in 1880	16.86	in 1880					
39	579,394 in 1883	1,393,688	in 1883	16,973 in 1883	17.2	in 1883	Filter			Sewers	
	585,523 in 1889	1,670,000	in 1889	19,941 in 1889	18.6	in 1889					
40	7,000			60	2					No sewers	
	160,000 in 1884	800,000	in 1880	2,500 in 1880	18	in 1884					
41	176,000 in 1887	1,000,000	in 1884	9,858 in 1889	19	in 1887				No sewers	
		2,000,000	in 1889								
42	± 7,000 in 1889	± 40,000	in 1889	± 800 in 1889	1.5	in 1889					
		± 700,000		260 in 1884							
43	9,200 in 1884			100 in 1889	4	in 1884				No sewers	
44	60,000 in 1887	100,000	in 1889	1,500 in 1889	6.7	in 1889				No sewers	
	80,000 in 1889										
45	250,000 in 1884	1,000,000	in 1880	7,400 in 1880	17.2	in 1880					
	340,000 in 1889	2,650,000	in 1884	9,503 in 1884	21	in 1884					
		3,000,000	in 1889	12,000 in 1889	29	in 1889					
46	± 175,000			± 1,000	13.25						
	800,000 in 1880			± 7,000 in 1880	11	in 1880				No sewers	
47	150,000 in 1884	1,000,000	in 1884	12,000 in 1884	13	in 1894				Sewers	
	210,500 in 1890	2,285,685	in 1890	19,600 in 1890	20 5	in 1890					
48											

TABLE IV — (*Concluded*).

Number	COST OF WORKS.	Daily consumption in gallons.	Annual expenses.	Miles of pipe.	Filtration.	Sewers.	Additions.
49	$215,992 in 1856 840,000 in 1880 1,085,960 in 1884 1,196,267 in 1890	4,500,000 in 1879 3,795,613 in 1884 8,000,000 in 1889	$30,000 in 1886 46,833 in 1884 84,874 in 1890	17.2 in 1856 43.7 in 1884 53 in 1889	.....	Sewers.....	
50	75,000 in 1880 ± 790,000 in 1887	1,250,000 in 1880 2,000,000 in 1892 3,000,000 in 1897	6,000 in 1892	30 in 1892 50 in 1939	.....	.....	
51	5,000 in 1889	.....	Nominal.....	5 in 1889	.....	No sewers.....	
52	30,000 in 1892 25,000 in 1889	.....	.....	4 in 1892	.....	.....	
53	72,000 in 1892 90,000 in 1897	164,857 in 1892 170,000 in 1897	± 1,600 in 1892 2,000 in 1897	8 in 1892	.....	.....	
54	60,000	.....	.....	7 in 1889	Filter.....	No sewers.....	
55	250,000 in 1892 300,000 in 1889	1,000,000 in 1892	17,000 in 1892	15 in 1892	.....	Sewers.....	
56	3,500	.....	50	3.5 in 1889	.....	No sewers.....	

*Summer.

Of the above list the following take their supplies directly from the Hudson or Mohawk rivers, and are, therefore, of special interest to us in this connection: Albany, Bath-on-the-Hudson, Catskill, Cohoes, East Albany, Greenbush, Green Island, Herkimer (driven wells near West Canada creek), Hudson, Poughkeepsie, Rome, Schenectady, Troy, Waterford, West Troy. Of some of these I am able to give further information, which is detailed below. Of most of the forty-one remaining it may be said that the watersheds of the streams in use are small and are readily protected by the methods now provided for by law. A very few are of larger extent and liable to undesirable pollution at some time in the future.

ALBANY.

There has been much discussion at various times of the question of water supply for the city of Albany. Early in the seventies it became necessary to find an additional supply owing to the inadequacy of the supply from the small streams above the city. At that time examinations were made of various proposed sources and the Hudson river was selected as then the purest source available at a cost not practically prohibitory. The methods of analysis in vogue indicated this, and the consideration of the amount of pollution entering the river above the city and its possible increase did not lead to the conclusion that this pollution would be dangerous. Apparently no thought was taken of the rate of increase. From Prof. Chandler's report on the river as a source of supply, dated 1872, I abstract the following:

"The watershed of the river above Albany is about 7,000 square miles in area. The population on it is about 400,000; of this there are in cities, Troy, 46,421; West Troy, 22,616; Utica, 28,798. There are fourteen other cities and towns with a population of 2,000 to 15,000 each, but the greater part of the population is scattered in small villages and hamlets and farm-houses. Few of the towns have sewers. The average density is represented by an area of eleven acres for each inhabitant. The average volume of the river is 618,111 cubic feet a minute, or 6,677,000,000 gallons a day, with a minimum of 1,829,000,000 in July, and a maximum of 12,330,000,000 in March. Comparing the above figures with the corresponding figures for the Thames river in England, it is found that the population on the Thames is two and one-half times, the

density of population is five times, the flow of water is one-fifth and the ratio of population to flow is twelve and one-half times the corresponding quantities for the Hudson."

In 1885 there was a discussion of the question of a further enlargement of the water supply, and a discussion of the question of the purity of the water at that time. Prof. Chandler finds no reason to revise his conclusions of 1872, and states that chemical analyses show a favorable comparison with other cities in this country and in Europe, and that chemical analyses are reliable indices of the comparative purity of waters; that biological examination shows no disease germs in the water; that there is no connection between the bacteria found in the water and disease germs; that ten years' experience shows less sickness in Albany from preventable diseases than in Troy; that a very small quantity of pollution from the Albany basin reaches the intake, but he recommends the cleaning or filling of the basin; that Tivoli reservoir should be protected from pollution, as this reservoir, fed from surface water has more pollution than the river; and that the water of the river is sufficiently free from contamination to allow its use in the absence of any source which is appreciably better.

Prof. A. R. Leeds, states that it is decided in all courts to which the question has been referred that corporations can not abuse the waters of streams, and that Albany is without doubt drinking Troy's diluted sewage and a part of their own. He considers that the river water after filtration would be safe to use. He does not find any source of water superior, even after filtration, to the filtered river water. The river water should be taken well above Albany and still as far below Troy as possible.

Prof. W. P. Mason made a more detailed study of the effect of the Troy sewage upon the river and its self-purification than either of the other chemists, and his results show an appreciable increase in impurity below the outlets of Troy sewers. He states that the addition of Troy sewage has an appreciable effect on the river; that there is no material change for the better before Albany is reached and that Albany's safety lies only in the amount of dilution. Albany sewage probably gets back to the intake. He proposes filter-beds and an intercepting sewer to take the sewage well below the city. The condition of the river may become dangerous at any time. No other adequate source than the Hudson river is apparent.

The chemical analyses referred to above are reserved until the next report.

HUDSON.

Mr. W. J. McAlpine made a report in 1872 on a water supply for the city of Hudson, and showed a clear saving in first cost of about fifty per cent of a supply from the river over one from surface waters above the city, and an appreciable saving when the increased cost of maintenance of the river plant is considered. He does not consider the river as a fit source of water supply even at that date but the city authorities decided to use the river. The water is at present filtered through a sand and gravel filter. I believe some analyses of the water have been made by chemists but I have been unable to find any of the results.

LANSINGBURGH.

In 1883 Mr. P. H. Baerman made a report on a water supply for the village of Lansingburgh, and showed such a difference in cost between the pumping and gravity plans, in favor of the latter, that it has been adopted, and the works have recently been completed to take a supply from Oil Mill creek.

LITTLE FALLS.

This village has recently completed a system of water-works taking a supply of water from a brook. The analysis of the water shows a pure and very soft water as it should be, as Beaver creek is a mountain trout stream.

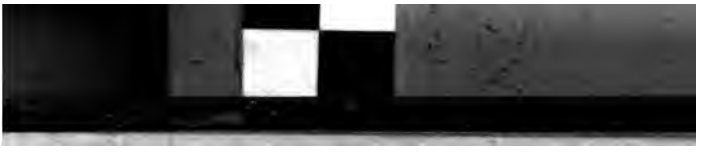
POUGHKEEPSIE.

This city has taken its supply from the Hudson for twenty years first running it through a sand and gravel filter-bed. According to the reports of the superintendent the condition of the river varies much and is often such as to make the continued working of the filter difficult. The amount of salt in the water is at times quite large owing to the flow of sea water to this point, but it is never in sufficient quantities to be particularly noticeable and only for a portion of the year. In some years the excess of salt is not observed and it often runs well below the limit that indicates appreciable sewage pollution in fresh water, according to the tests for chlorine applied by the water-works authorities. Some complaint is made of the growth of algæ in the









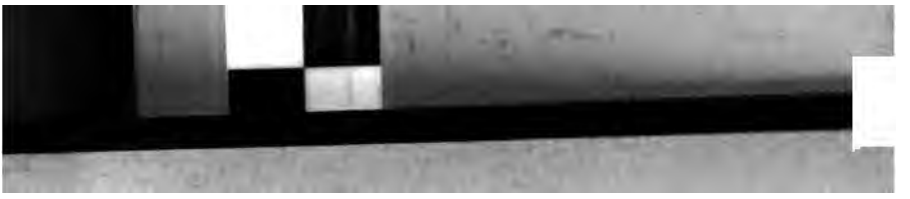
sewage pollution, are reserved until the next report, as belonging more properly with it. The data given above will serve to show the magnitude of the problem and its great importance.

The work of the next year will include a series of chemical and biological analyses of the water of the river and its principal tributaries and the next report will give the results of these examinations, the data above reserved and others to be obtained, as well as a discussion of the results.

Respectfully submitted,

CHAS. C. BROWN, C. E.







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